



SEQUENCE LISTING

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<120> NPC1L1 (NPC3) AND METHODS OF USE THEREOF

<130> JB01603K2 US

<140> 10/663,208

<141> 2003-09-16

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<151> 2002-07-19

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<151> 2003-07-17

<150> 10/646,301

<151> 2003-08-22

<160> 50

<170> PatentIn version 3.1

<210> 1

<211> 3996

<212> DNA

<213> Rattus sp.

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| Met Ala Ala Ala Trp Leu Gly Trp Leu Leu Trp Ala Leu Leu Leu Ser |     |
| 1 5 10 15   |     |
| gcg gcc cag ggt gag cta tac aca ccc aaa cac gaa gct ggg gtc tgc | 96  |
| Ala Ala Gln Gly Glu Leu Tyr Thr Pro Lys His Glu Ala Gly Val Cys |     |
| 20 25 30  |     |
| acc ttt tac gaa gag tgc ggg aaa aac cca gag ctc tct gga ggc ctc | 144 |
| Thr Phe Tyr Glu Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Gly Leu |     |
| 35 40 45  |     |
| acg tca cta tcc aat gta tcc tgc ctg tct aac acc ccg gcc cgc cac | 192 |
| Thr Ser Leu Ser Asn Val Ser Cys Leu Ser Asn Thr Pro Ala Arg His |     |
| 50 55 60  |     |
| gtc acg ggt gaa cac ctg gct ctt ctc cag cgc atc tgt ccc cgc ctg | 240 |
| Val Thr Gly Glu His Leu Ala Leu Leu Gln Arg Ile Cys Pro Arg Leu |     |
| 65 70 75 80   |     |
| tac aac ggc ccc aat acc act ttt gcc tgt tgc tct acc aag cag ctg | 288 |
| Tyr Asn Gly Pro Asn Thr Thr Phe Ala Cys Cys Ser Thr Lys Gln Leu |     |
| 85 90 95  |     |
| ctg tcc tta gaa agc agc atg tcc atc acc aag gcc ctt ctc acg cgc | 336 |
| Leu Ser Leu Glu Ser Ser Met Ser Ile Thr Lys Ala Leu Leu Thr Arg |     |
| 100 105 110   |     |
| tgc ccg gcc tgc tct gac aat ttt gtg agc tta cac tgc cac aac act | 384 |
| Cys Pro Ala Cys Ser Asp Asn Phe Val Ser Leu His Cys His Asn Thr |     |
| 115 120 125   |     |
| tgc agc cct gac cag agc ctc ttc atc aac gtc acc cgg gtg gtt gag | 432 |
| Cys Ser Pro Asp Gln Ser Leu Phe Ile Asn Val Thr Arg Val Val Glu |     |
| 130 135 140   |     |
| cgg ggc gct gga gag cct cct gcc gtg gtg gcc tat gag gcc ttt tat | 480 |
| Arg Gly Ala Gly Glu Pro Pro Ala Val Val Ala Tyr Glu Ala Phe Tyr |     |
| 145 150 155 160   |     |
| cag cgc agc ttt gct gag aag gcc tat gag tcc tgc agc cag gtg cgc | 528 |
| Gln Arg Ser Phe Ala Glu Lys Ala Tyr Glu Ser Cys Ser Gln Val Arg |     |
| 165 170 175   |     |
| atc cct gcg gcc gct tcc ttg gcc gtg ggc agc atg tgt gga gtg tat | 576 |
| Ile Pro Ala Ala Ala Ser Leu Ala Val Gly Ser Met Cys Gly Val Tyr |     |
| 180 185 190   |     |
| ggc tcc gcc ctc tgc aat gct cag cgc tgg ctc aac ttc caa gga gac | 624 |
| Gly Ser Ala Leu Cys Asn Ala Gln Arg Trp Leu Asn Phe Gln Gly Asp |     |
| 195 200 205   |     |
| aca ggg aat ggc ctg gct ccg ctg gat atc acc ttc cac ctc ttg gag | 672 |
| Thr Gly Asn Gly Leu Ala Pro Leu Asp Ile Thr Phe His Leu Leu Glu |     |

| 210   | 215 | 220 |      |
|---|-----|-----|------|
| cct ggc cag gcc cta ccg gat ggg atc cag cca ctg aat ggg aag atc<br>Pro Gly Gln Ala Leu Pro Asp Gly Ile Gln Pro Leu Asn Gly Lys Ile<br>225 230 235 240 |     |     | 720  |
| gca ccc tgc aac gag tct cag ggt gat gac tca gca gtc tgc tcc tgc<br>Ala Pro Cys Asn Glu Ser Gln Gly Asp Asp Ser Ala Val Cys Ser Cys<br>245 250 255     |     |     | 768  |
| cag gac tgt gcg gcg tcc tgc cct gtc atc cct ccg ccc gag gcc ttg<br>Gln Asp Cys Ala Ala Ser Cys Pro Val Ile Pro Pro Pro Glu Ala Leu<br>260 265 270     |     |     | 816  |
| cgc cct tcc ttc tac atg ggt cgc atg cca ggc tgg ctg gcc ctc atc<br>Arg Pro Ser Phe Tyr Met Gly Arg Met Pro Gly Trp Leu Ala Leu Ile<br>275 280 285     |     |     | 864  |
| atc atc ttc act gct gtc ttt gtg ttg ctc tct gca gtc ctt gtg cgt<br>Ile Ile Phe Thr Ala Val Phe Val Leu Leu Ser Ala Val Leu Val Arg<br>290 295 300     |     |     | 912  |
| ctc cga gtg gtt tcc aac agg aac aag aac aag gca gaa ggc ccc cag<br>Leu Arg Val Val Ser Asn Arg Asn Lys Asn Lys Ala Glu Gly Pro Gln<br>305 310 315 320 |     |     | 960  |
| gaa gcc ccc aaa ctc cct cat aag cac aaa ctc tca ccc cat acc atc<br>Glu Ala Pro Lys Leu Pro His Lys His Lys Leu Ser Pro His Thr Ile<br>325 330 335     |     |     | 1008 |
| ctg ggc cgg ttc ttc cag aac tgg ggc aca agg gtg gcc tcg tgg cca<br>Leu Gly Arg Phe Phe Gln Asn Trp Gly Thr Arg Val Ala Ser Trp Pro<br>340 345 350     |     |     | 1056 |
| ctc acc gtc tta gca ctg tcc ttc atc gtt gtg ata gcc tta gca gca<br>Leu Thr Val Leu Ala Leu Ser Phe Ile Val Val Ile Ala Leu Ala Ala<br>355 360 365     |     |     | 1104 |
| ggc ctg acc ttt att gaa ctc acc aca gac cct gtg gaa ctg tgg tcg<br>Gly Leu Thr Phe Ile Glu Leu Thr Thr Asp Pro Val Glu Leu Trp Ser<br>370 375 380     |     |     | 1152 |
| gcc ccc aag agc cag gcc cgg aaa gag aag tct ttc cat gat gag cat<br>Ala Pro Lys Ser Gln Ala Arg Lys Glu Lys Ser Phe His Asp Glu His<br>385 390 395 400 |     |     | 1200 |
| ttc ggc ccc ttc ttt cga acc aac cag att ttc gtg aca gct cgg aac<br>Phe Gly Pro Phe Phe Arg Thr Asn Gln Ile Phe Val Thr Ala Arg Asn<br>405 410 415     |     |     | 1248 |
| agg tcc agc tac aag tac gac tcc cta ctg cta ggg tcc aag aac ttc<br>Arg Ser Ser Tyr Lys Tyr Asp Ser Leu Leu Leu Gly Ser Lys Asn Phe<br>420 425 430     |     |     | 1296 |
| agt ggg atc ctg tcc ctg gac ttc ctg ctg gag ctg ctg gag ctt cag<br>Ser Gly Ile Leu Ser Leu Asp Phe Leu Leu Glu Leu Glu Leu Gln<br>435 440 445         |     |     | 1344 |
| gag agg ctt cga cac ctg caa gtg tgg tcc cct gag gca gag cgc aac<br>Glu Arg Leu Arg His Leu Gln Val Trp Ser Pro Glu Ala Glu Arg Asn<br>450 455 460     |     |     | 1392 |

|   |   |      |
|---|---|------|
| atc tcc ctc cag gac<br>Ile Ser Leu Gln Asp<br>465   | atc tgc tat gcc ccc ctc aac cca tat aac acc<br>Ile Cys Tyr Ala Pro Leu Asn Pro Tyr Asn Thr<br>470 475 480 | 1440 |
| agc ctc tcc gac tgc tgt gtc aac agc ctc ctt cag tac ttc cag aac<br>Ser Leu Ser Asp Cys Cys Val Asn Ser Leu Leu Gln Tyr Phe Gln Asn<br>485 490 495     | 1488  |      |
| aac cgc acc ctc ctg atg ctc acg gcc aac cag act ctg aat ggc cag<br>Asn Arg Thr Leu Leu Met Leu Thr Ala Asn Gln Thr Leu Asn Gly Gln<br>500 505 510     | 1536  |      |
| acc tcc ctg gtg gac tgg aag gac cat ttc ctc tac tgt gca aat gcc<br>Thr Ser Leu Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala<br>515 520 525     | 1584  |      |
| cct ctc acg ttc aaa gat ggc acg tct ctg gcc ctg agc tgc atg gct<br>Pro Leu Thr Phe Lys Asp Gly Thr Ser Leu Ala Leu Ser Cys Met Ala<br>530 535 540     | 1632  |      |
| gac tac ggg gct cct gtc ttc ccc ttc ctt gct gtt ggg gga tac caa<br>Asp Tyr Gly Ala Pro Val Phe Pro Phe Leu Ala Val Gly Gly Tyr Gln<br>545 550 555 560 | 1680  |      |
| ggc acg gac tat tcc gag gca gaa gcg ctg atc ata acc ttc tct ctc<br>Gly Thr Asp Tyr Ser Glu Ala Glu Ala Leu Ile Ile Thr Phe Ser Leu<br>565 570 575     | 1728  |      |
| aat aac tac ccc gct gat gat ccc cgc atg gcc cag gcc aag ctc tgg<br>Asn Asn Tyr Pro Ala Asp Asp Pro Arg Met Ala Gln Ala Lys Leu Trp<br>580 585 590     | 1776  |      |
| gag gag gct ttc ttg aag gaa atg gaa tcc ttc cag agg aac aca agt<br>Glu Glu Ala Phe Leu Lys Glu Met Glu Ser Phe Gln Arg Asn Thr Ser<br>595 600 605     | 1824  |      |
| gac aag ttc cag gtt gcg ttc tca gct gag cgc tct ctg gag gat gag<br>Asp Lys Phe Gln Val Ala Phe Ser Ala Glu Arg Ser Leu Glu Asp Glu<br>610 615 620     | 1872  |      |
| atc aac cgc acc acc atc cag gac ctg cct gtc ttt gcc gtc agc tac<br>Ile Asn Arg Thr Thr Ile Gln Asp Leu Pro Val Phe Ala Val Ser Tyr<br>625 630 635 640 | 1920  |      |
| att atc gtc ttc ctg tac atc tcc ctg gcc ctg ggc agc tac tcc aga<br>Ile Ile Val Phe Leu Tyr Ile Ser Leu Ala Leu Gly Ser Tyr Ser Arg<br>645 650 655     | 1968  |      |
| tgc agc cga gta gcg gtg gag tcc aag gct act ctg ggc cta ggt ggg<br>Cys Ser Arg Val Ala Val Glu Ser Lys Ala Thr Leu Gly Leu Gly Gly<br>660 665 670     | 2016  |      |
| gtg att gtt gtg ctg gga gca gtt ctg gct gcc atg ggc ttc tac tcc<br>Val Ile Val Val Leu Gly Ala Val Leu Ala Ala Met Gly Phe Tyr Ser<br>675 680 685     | 2064  |      |
| tac ctg ggt gtc ccc tct tct ctg gtt atc atc caa gtg gta cct ttc<br>Tyr Leu Gly Val Pro Ser Ser Leu Val Ile Ile Gln Val Val Pro Phe<br>690 695 700     | 2112  |      |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| ctg | gtg | cta | gct | gtg | gga | gct | gac | aac | atc | ttc | atc | ttt | gtt | ctt | gag | 2160 |
| Leu | Val | Leu | Ala | Val | Gly | Ala | Asp | Asn | Ile | Phe | Ile | Phe | Val | Leu | Glu |      |
| 705 |     |     |     |     | 710 |     |     |     |     | 715 |     |     |     |     | 720 |      |
| tac | cag | agg | cta | cct | agg | atg | cct | ggg | gaa | cag | cga | gag | gct | cac | att | 2208 |
| Tyr | Gln | Arg | Leu | Pro | Arg | Met | Pro | Gly | Glu | Gln | Arg | Glu | Ala | His | Ile |      |
|     |     |     |     | 725 |     |     |     |     | 730 |     |     |     |     | 735 |     |      |
| ggc | cgc | acc | ctg | ggc | agt | gtg | gcc | ccc | agc | atg | ctg | ctg | tgc | agc | ctc | 2256 |
| Gly | Arg | Thr | Leu | Gly | Ser | Val | Ala | Pro | Ser | Met | Leu | Leu | Cys | Ser | Leu |      |
|     |     |     | 740 |     |     |     |     | 745 |     |     |     |     | 750 |     |     |      |
| tct | gag | gcc | atc | tgc | ttc | ttt | cta | ggg | gcc | ctg | acc | ccc | atg | cca | gct | 2304 |
| Ser | Glu | Ala | Ile | Cys | Phe | Phe | Leu | Gly | Ala | Leu | Thr | Pro | Met | Pro | Ala |      |
|     |     | 755 |     |     |     |     | 760 |     |     |     |     | 765 |     |     |     |      |
| gtg | agg | acc | ttc | gcc | ttg | acc | tct | ggc | tta | gca | att | atc | ctc | gac | ttc | 2352 |
| Val | Arg | Thr | Phe | Ala | Leu | Thr | Ser | Gly | Leu | Ala | Ile | Ile | Leu | Asp | Phe |      |
|     | 770 |     |     |     |     | 775 |     |     |     |     | 780 |     |     |     |     |      |
| ctg | ctc | cag | atg | act | gcc | ttt | gtg | gcc | ctg | ctc | tcc | ctg | gat | agc | aag | 2400 |
| Leu | Leu | Gln | Met | Thr | Ala | Phe | Val | Ala | Leu | Leu | Ser | Leu | Asp | Ser | Lys |      |
| 785 |     |     |     |     | 790 |     |     |     |     | 795 |     |     |     |     | 800 |      |
| agg | cag | gag | gcc | tct | cgc | ccg | gat | gtc | tta | tgc | tgc | ttt | tca | acc | cgg | 2448 |
| Arg | Gln | Glu | Ala | Ser | Arg | Pro | Asp | Val | Leu | Cys | Cys | Phe | Ser | Thr | Arg |      |
|     |     |     |     | 805 |     |     |     |     | 810 |     |     |     |     | 815 |     |      |
| aag | ctg | ccc | cca | cct | aaa | gaa | aaa | gaa | ggc | ctc | tta | ctc | cgc | ttc | ttc | 2496 |
| Lys | Leu | Pro | Pro | Pro | Lys | Glu | Lys | Glu | Gly | Leu | Leu | Leu | Arg | Phe | Phe |      |
|     |     |     | 820 |     |     |     |     | 825 |     |     |     |     | 830 |     |     |      |
| cgc | aag | ata | tac | gct | cct | ttc | ctg | ctg | cac | aga | ttc | atc | cgc | cct | gtt | 2544 |
| Arg | Lys | Ile | Tyr | Ala | Pro | Phe | Leu | Leu | His | Arg | Phe | Ile | Arg | Pro | Val |      |
|     |     | 835 |     |     |     |     | 840 |     |     |     |     | 845 |     |     |     |      |
| gtg | atg | ctg | ctg | ttt | ctg | acc | ctg | ttt | gga | gca | aat | ctc | tac | tta | atg | 2592 |
| Val | Met | Leu | Leu | Phe | Leu | Thr | Leu | Phe | Gly | Ala | Asn | Leu | Tyr | Leu | Met |      |
|     | 850 |     |     |     |     | 855 |     |     |     |     | 860 |     |     |     |     |      |
| tgc | aac | atc | aac | gtg | ggg | cta | gac | cag | gag | ctg | gct | ctg | ccc | aag | gac | 2640 |
| Cys | Asn | Ile | Asn | Val | Gly | Leu | Asp | Gln | Glu | Leu | Ala | Leu | Pro | Lys | Asp |      |
| 865 |     |     |     |     | 870 |     |     |     |     | 875 |     |     |     |     | 880 |      |
| tcg | tac | ttg | ata | gac | tac | ttc | ctc | ttt | ctg | aac | cga | tac | ctt | gaa | gtg | 2688 |
| Ser | Tyr | Leu | Ile | Asp | Tyr | Phe | Leu | Phe | Leu | Asn | Arg | Tyr | Leu | Glu | Val |      |
|     |     |     |     | 885 |     |     |     |     | 890 |     |     |     |     | 895 |     |      |
| ggg | cct | cca | gtg | tac | ttt | gtc | acc | acc | tcg | ggc | ttc | aac | ttc | tcc | agc | 2736 |
| Gly | Pro | Pro | Val | Tyr | Phe | Val | Thr | Thr | Ser | Gly | Phe | Asn | Phe | Ser | Ser |      |
|     |     |     | 900 |     |     |     |     | 905 |     |     |     |     | 910 |     |     |      |
| gag | gca | ggc | atg | aac | gcc | act | tgc | tct | agc | gca | ggc | tgt | aag | agc | ttc | 2784 |
| Glu | Ala | Gly | Met | Asn | Ala | Thr | Cys | Ser | Ser | Ala | Gly | Cys | Lys | Ser | Phe |      |
|     |     | 915 |     |     |     |     | 920 |     |     |     |     | 925 |     |     |     |      |
| tcc | cta | acc | cag | aaa | atc | cag | tat | gcc | agt | gaa | ttc | cct | gac | cag | tct | 2832 |
| Ser | Leu | Thr | Gln | Lys | Ile | Gln | Tyr | Ala | Ser | Glu | Phe | Pro | Asp | Gln | Ser |      |
|     | 930 |     |     |     |     | 935 |     |     |     |     | 940 |     |     |     |     |      |
| tac | gtg | gct | att | gct | gca | tcc | tcc | tgg | gta | gat | gac | ttc | atc | gac | tgg | 2880 |

|            |      |     |     |     |     |      |      |     |     |     |      |      |     |     |     |      |
|------------|------|-----|-----|-----|-----|------|------|-----|-----|-----|------|------|-----|-----|-----|------|
| Tyr<br>945 | Val  | Ala | Ile | Ala | Ala | Ser  | Ser  | Trp | Val | Asp | Asp  | Phe  | Ile | Asp | Trp |      |
|            |      |     |     |     | 950 |      |      |     |     | 955 |      |      |     |     | 960 |      |
| ctg        | acc  | ccg | tcc | tcc | tcc | tgc  | tgt  | cgc | ctt | tat | ata  | cgt  | ggc | ccc | cat | 2928 |
| Leu        | Thr  | Pro | Ser | Ser | Ser | Cys  | Cys  | Arg | Leu | Tyr | Ile  | Arg  | Gly | Pro | His |      |
|            |      |     |     | 965 |     |      |      |     | 970 |     |      |      |     | 975 |     |      |
| aag        | gat  | gag | ttc | tgt | ccc | tca  | acg  | gat | act | tcc | ttc  | aac  | tgc | tta | aaa | 2976 |
| Lys        | Asp  | Glu | Phe | Cys | Pro | Ser  | Thr  | Asp | Thr | Ser | Phe  | Asn  | Cys | Leu | Lys |      |
|            |      |     | 980 |     |     |      |      | 985 |     |     |      |      | 990 |     |     |      |
| aac        | tgc  | atg | aac | cgc | act | ctg  | ggc  | cct | gtg | agg | ccc  | aca  | gcg | gaa | cag | 3024 |
| Asn        | Cys  | Met | Asn | Arg | Thr | Leu  | Gly  | Pro | Val | Arg | Pro  | Thr  | Ala | Glu | Gln |      |
|            |      | 995 |     |     |     |      | 1000 |     |     |     |      | 1005 |     |     |     |      |
| ttt        | cat  | aag | tac | ctg | ccc | tgg  | ttc  | ctg | aat | gat | ccg  | ccc  | aat | atc |     | 3069 |
| Phe        | His  | Lys | Tyr | Leu | Pro | Trp  | Phe  | Leu | Asn | Asp | Pro  | Pro  | Asn | Ile |     |      |
|            | 1010 |     |     |     |     | 1015 |      |     |     |     | 1020 |      |     |     |     |      |
| aga        | tgt  | ccc | aaa | ggg | ggc | cta  | gca  | gcg | tat | aga | acg  | tct  | gtg | aat |     | 3114 |
| Arg        | Cys  | Pro | Lys | Gly | Gly | Leu  | Ala  | Ala | Tyr | Arg | Thr  | Ser  | Val | Asn |     |      |
|            | 1025 |     |     |     |     | 1030 |      |     |     |     | 1035 |      |     |     |     |      |
| ttg        | agc  | tca | gat | ggc | cag | gtt  | ata  | gcc | tcc | cag | ttc  | atg  | gcc | tac |     | 3159 |
| Leu        | Ser  | Ser | Asp | Gly | Gln | Val  | Ile  | Ala | Ser | Gln | Phe  | Met  | Ala | Tyr |     |      |
|            | 1040 |     |     |     |     | 1045 |      |     |     |     | 1050 |      |     |     |     |      |
| cac        | aag  | ccc | tta | agg | aac | tca  | cag  | gac | ttc | aca | gaa  | gct  | ctc | cgg |     | 3204 |
| His        | Lys  | Pro | Leu | Arg | Asn | Ser  | Gln  | Asp | Phe | Thr | Glu  | Ala  | Leu | Arg |     |      |
|            | 1055 |     |     |     |     | 1060 |      |     |     |     | 1065 |      |     |     |     |      |
| gcg        | tcc  | cgg | ttg | cta | gca | gcc  | aac  | atc | aca | gct | gac  | cta  | cgg | aag |     | 3249 |
| Ala        | Ser  | Arg | Leu | Leu | Ala | Ala  | Asn  | Ile | Thr | Ala | Asp  | Leu  | Arg | Lys |     |      |
|            | 1070 |     |     |     |     | 1075 |      |     |     |     | 1080 |      |     |     |     |      |
| gtg        | cct  | ggg | aca | gat | cca | aac  | ttt  | gag | gtc | ttc | cct  | tac  | acg | atc |     | 3294 |
| Val        | Pro  | Gly | Thr | Asp | Pro | Asn  | Phe  | Glu | Val | Phe | Pro  | Tyr  | Thr | Ile |     |      |
|            | 1085 |     |     |     |     | 1090 |      |     |     |     | 1095 |      |     |     |     |      |
| tcc        | aac  | gtg | ttc | tac | cag | caa  | tac  | ctg | acg | gtc | ctt  | cct  | gag | gga |     | 3339 |
| Ser        | Asn  | Val | Phe | Tyr | Gln | Gln  | Tyr  | Leu | Thr | Val | Leu  | Pro  | Glu | Gly |     |      |
|            | 1100 |     |     |     |     | 1105 |      |     |     |     | 1110 |      |     |     |     |      |
| atc        | ttc  | acc | ctt | gct | ctt | tgc  | ttt  | gtg | ccc | acc | ttt  | gtt  | gtc | tgc |     | 3384 |
| Ile        | Phe  | Thr | Leu | Ala | Leu | Cys  | Phe  | Val | Pro | Thr | Phe  | Val  | Val | Cys |     |      |
|            | 1115 |     |     |     |     | 1120 |      |     |     |     | 1125 |      |     |     |     |      |
| tac        | ctc  | cta | ctg | ggc | ctg | gac  | atg  | tgc | tca | ggg | atc  | ctc  | aac | cta |     | 3429 |
| Tyr        | Leu  | Leu | Leu | Gly | Leu | Asp  | Met  | Cys | Ser | Gly | Ile  | Leu  | Asn | Leu |     |      |
|            | 1130 |     |     |     |     | 1135 |      |     |     |     | 1140 |      |     |     |     |      |
| ctc        | tcc  | atc | att | atg | att | ctc  | gtg  | gac | acc | att | ggc  | ctc  | atg | gct |     | 3474 |
| Leu        | Ser  | Ile | Ile | Met | Ile | Leu  | Val  | Asp | Thr | Ile | Gly  | Leu  | Met |     |     |      |

| 1175  | 1180 | 1185 |      |
|---|------|------|------|
| tcc ttt gct gta agc acc aag cct acc cgg ctg gag agg gct aaa |      |      | 3609 |
| Ser Phe Ala Val Ser Thr Lys Pro Thr Arg Leu Glu Arg Ala Lys |      |      |      |
| 1190  | 1195 | 1200 |      |
| gat gct act gtc ttc atg ggc agt gcg gtg ttt gct gga gtg gcc |      |      | 3654 |
| Asp Ala Thr Val Phe Met Gly Ser Ala Val Phe Ala Gly Val Ala |      |      |      |
| 1205  | 1210 | 1215 |      |
| atg acc aac ttc cca ggc atc ctc atc ttg ggc ttt gcc caa gcc |      |      | 3699 |
| Met Thr Asn Phe Pro Gly Ile Leu Ile Leu Gly Phe Ala Gln Ala |      |      |      |
| 1220  | 1225 | 1230 |      |
| cag ctt att cag atc ttc ttc ttc cgc ctc aac ctt ctg atc acc |      |      | 3744 |
| Gln Leu Ile Gln Ile Phe Phe Phe Arg Leu Asn Leu Leu Ile Thr |      |      |      |
| 1235  | 1240 | 1245 |      |
| ttg ctg ggt ctg ctg cat ggc ctg gtc ttc ctg ccg gtt gtc ctc |      |      | 3789 |
| Leu Leu Gly Leu Leu His Gly Leu Val Phe Leu Pro Val Val Leu |      |      |      |
| 1250  | 1255 | 1260 |      |
| agc tat ctg gga cca gat gtt aac caa gct ctg gta cag gag gag |      |      | 3834 |
| Ser Tyr Leu Gly Pro Asp Val Asn Gln Ala Leu Val Gln Glu Glu |      |      |      |
| 1265  | 1270 | 1275 |      |
| aaa cta gcc agc gag gca gca gtg gcc cca gag cct tct tgc cca |      |      | 3879 |
| Lys Leu Ala Ser Glu Ala Ala Val Ala Pro Glu Pro Ser Cys Pro |      |      |      |
| 1280  | 1285 | 1290 |      |
| cag tac ccc tcc cct gct gat gcg gat gcc aat gtt aac tac ggc |      |      | 3924 |
| Gln Tyr Pro Ser Pro Ala Asp Ala Asp Ala Asn Val Asn Tyr Gly |      |      |      |
| 1295  | 1300 | 1305 |      |
| ttt gcc cca gaa ctt gcc cac gga gct aat gct gct aga agc tct |      |      | 3969 |
| Phe Ala Pro Glu Leu Ala His Gly Ala Asn Ala Ala Arg Ser Ser |      |      |      |
| 1310  | 1315 | 1320 |      |
| ttg ccc aaa agt gac caa aag ttc taa                         |      |      | 3996 |
| Leu Pro Lys Ser Asp Gln Lys Phe                             |      |      |      |
| 1325  | 1330 |      |      |

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<211> 1331

<212> PRT

<213> Rattus sp.

<400> 2

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Ala | Ala | Ala | Trp | Leu | Gly | Trp | Leu | Leu | Trp | Ala | Leu | Leu | Leu | Ser |
| 1   |     |     |     | 5   |     |     |     | 10  |     |     |     |     |     | 15  |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Ala | Gln | Gly | Glu | Leu | Tyr | Thr | Pro | Lys | His | Glu | Ala | Gly | Val | Cys |
|     |     | 20  |     |     |     |     |     | 25  |     |     |     |     | 30  |     |     |

Thr Phe Tyr Glu Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Gly Leu  
 35 40 45

Thr Ser Leu Ser Asn Val Ser Cys Leu Ser Asn Thr Pro Ala Arg His  
 50 55 60

Val Thr Gly Glu His Leu Ala Leu Leu Gln Arg Ile Cys Pro Arg Leu  
 65 70 75 80

Tyr Asn Gly Pro Asn Thr Thr Phe Ala Cys Cys Ser Thr Lys Gln Leu  
 85 90 95

Leu Ser Leu Glu Ser Ser Met Ser Ile Thr Lys Ala Leu Leu Thr Arg  
 100 105 110

Cys Pro Ala Cys Ser Asp Asn Phe Val Ser Leu His Cys His Asn Thr  
 115 120 125

Cys Ser Pro Asp Gln Ser Leu Phe Ile Asn Val Thr Arg Val Val Glu  
 130 135 140

Arg Gly Ala Gly Glu Pro Pro Ala Val Val Ala Tyr Glu Ala Phe Tyr  
 145 150 155 160

Gln Arg Ser Phe Ala Glu Lys Ala Tyr Glu Ser Cys Ser Gln Val Arg  
 165 170 175

Ile Pro Ala Ala Ala Ser Leu Ala Val Gly Ser Met Cys Gly Val Tyr  
 180 185 190

Gly Ser Ala Leu Cys Asn Ala Gln Arg Trp Leu Asn Phe Gln Gly Asp  
 195 200 205

Thr Gly Asn Gly Leu Ala Pro Leu Asp Ile Thr Phe His Leu Leu Glu  
 210 215 220

Pro Gly Gln Ala Leu Pro Asp Gly Ile Gln Pro Leu Asn Gly Lys Ile  
 225 230 235 240

Ala Pro Cys Asn Glu Ser Gln Gly Asp Asp Ser Ala Val Cys Ser Cys  
 245 250 255

Gln Asp Cys Ala Ala Ser Cys Pro Val Ile Pro Pro Pro Glu Ala Leu  
 260 265 270



Arg Pro Ser Phe Tyr Met Gly Arg Met Pro Gly Trp Leu Ala Leu Ile  
 275 280 285

Ile Ile Phe Thr Ala Val Phe Val Leu Leu Ser Ala Val Leu Val Arg  
 290 295 300

Leu Arg Val Val Ser Asn Arg Asn Lys Asn Lys Ala Glu Gly Pro Gln  
 305 310 315 320

Glu Ala Pro Lys Leu Pro His Lys His Lys Leu Ser Pro His Thr Ile  
 325 330 335

Leu Gly Arg Phe Phe Gln Asn Trp Gly Thr Arg Val Ala Ser Trp Pro  
 340 345 350

Leu Thr Val Leu Ala Leu Ser Phe Ile Val Val Ile Ala Leu Ala Ala  
 355 360 365

Gly Leu Thr Phe Ile Glu Leu Thr Thr Asp Pro Val Glu Leu Trp Ser  
 370 375 380

Ala Pro Lys Ser Gln Ala Arg Lys Glu Lys Ser Phe His Asp Glu His  
 385 390 395 400

Phe Gly Pro Phe Phe Arg Thr Asn Gln Ile Phe Val Thr Ala Arg Asn  
 405 410 415

Arg Ser Ser Tyr Lys Tyr Asp Ser Leu Leu Leu Gly Ser Lys Asn Phe  
 420 425 430

Ser Gly Ile Leu Ser Leu Asp Phe Leu Leu Glu Leu Leu Glu Leu Gln  
 435 440 445

Glu Arg Leu Arg His Leu Gln Val Trp Ser Pro Glu Ala Glu Arg Asn  
 450 455 460

Ile Ser Leu Gln Asp Ile Cys Tyr Ala Pro Leu Asn Pro Tyr Asn Thr  
 465 470 475 480

Ser Leu Ser Asp Cys Cys Val Asn Ser Leu Leu Gln Tyr Phe Gln Asn  
 485 490 495

Asn Arg Thr Leu Leu Met Leu Thr Ala Asn Gln Thr Leu Asn Gly Gln  
 500 505 510

Thr Ser Leu Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala  
 515 520 525

Pro Leu Thr Phe Lys Asp Gly Thr Ser Leu Ala Leu Ser Cys Met Ala  
 530 535 540

Asp Tyr Gly Ala Pro Val Phe Pro Phe Leu Ala Val Gly Gly Tyr Gln  
 545 550 555 560

Gly Thr Asp Tyr Ser Glu Ala Glu Ala Leu Ile Ile Thr Phe Ser Leu  
 565 570 575

Asn Asn Tyr Pro Ala Asp Asp Pro Arg Met Ala Gln Ala Lys Leu Trp  
 580 585 590

Glu Glu Ala Phe Leu Lys Glu Met Glu Ser Phe Gln Arg Asn Thr Ser  
 595 600 605

Asp Lys Phe Gln Val Ala Phe Ser Ala Glu Arg Ser Leu Glu Asp Glu  
 610 615 620

Ile Asn Arg Thr Thr Ile Gln Asp Leu Pro Val Phe Ala Val Ser Tyr  
 625 630 635 640

Ile Ile Val Phe Leu Tyr Ile Ser Leu Ala Leu Gly Ser Tyr Ser Arg  
 645 650 655

Cys Ser Arg Val Ala Val Glu Ser Lys Ala Thr Leu Gly Leu Gly Gly  
 660 665 670

Val Ile Val Val Leu Gly Ala Val Leu Ala Ala Met Gly Phe Tyr Ser  
 675 680 685

Tyr Leu Gly Val Pro Ser Ser Leu Val Ile Ile Gln Val Val Pro Phe  
 690 695 700

Leu Val Leu Ala Val Gly Ala Asp Asn Ile Phe Ile Phe Val Leu Glu  
 705 710 715 720

Tyr Gln Arg Leu Pro Arg Met Pro Gly Glu Gln Arg Glu Ala His Ile  
 725 730 735

Gly Arg Thr Leu Gly Ser Val Ala Pro Ser Met Leu Leu Cys Ser Leu  
 740 745 750

Ser Glu Ala Ile Cys Phe Phe Leu Gly Ala Leu Thr Pro Met Pro Ala

|     |     |     |     |     |     |     |      |     |     |     |     |      |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|-----|
| 755 |     |     |     |     |     |     | 760  |     |     |     |     |      |     |     |     | 765 |
| Val | Arg | Thr | Phe | Ala | Leu | Thr | Ser  | Gly | Leu | Ala | Ile | Ile  | Leu | Asp | Phe |     |
| 770 |     |     |     |     |     | 775 |      |     |     |     | 780 |      |     |     |     |     |
| Leu | Leu | Gln | Met | Thr | Ala | Phe | Val  | Ala | Leu | Leu | Ser | Leu  | Asp | Ser | Lys |     |
| 785 |     |     |     |     | 790 |     |      |     |     | 795 |     |      |     |     | 800 |     |
| Arg | Gln | Glu | Ala | Ser | Arg | Pro | Asp  | Val | Leu | Cys | Cys | Phe  | Ser | Thr | Arg |     |
|     |     |     |     | 805 |     |     |      |     | 810 |     |     |      |     | 815 |     |     |
| Lys | Leu | Pro | Pro | Pro | Lys | Glu | Lys  | Glu | Gly | Leu | Leu | Leu  | Arg | Phe | Phe |     |
|     |     |     | 820 |     |     |     |      | 825 |     |     |     |      | 830 |     |     |     |
| Arg | Lys | Ile | Tyr | Ala | Pro | Phe | Leu  | Leu | His | Arg | Phe | Ile  | Arg | Pro | Val |     |
|     |     | 835 |     |     |     |     | 840  |     |     |     |     | 845  |     |     |     |     |
| Val | Met | Leu | Leu | Phe | Leu | Thr | Leu  | Phe | Gly | Ala | Asn | Leu  | Tyr | Leu | Met |     |
| 850 |     |     |     |     |     | 855 |      |     |     |     | 860 |      |     |     |     |     |
| Cys | Asn | Ile | Asn | Val | Gly | Leu | Asp  | Gln | Glu | Leu | Ala | Leu  | Pro | Lys | Asp |     |
| 865 |     |     |     |     | 870 |     |      |     |     | 875 |     |      |     |     | 880 |     |
| Ser | Tyr | Leu | Ile | Asp | Tyr | Phe | Leu  | Phe | Leu | Asn | Arg | Tyr  | Leu | Glu | Val |     |
|     |     |     |     | 885 |     |     |      |     | 890 |     |     |      |     | 895 |     |     |
| Gly | Pro | Pro | Val | Tyr | Phe | Val | Thr  | Thr | Ser | Gly | Phe | Asn  | Phe | Ser | Ser |     |
|     |     |     | 900 |     |     |     |      | 905 |     |     |     |      | 910 |     |     |     |
| Glu | Ala | Gly | Met | Asn | Ala | Thr | Cys  | Ser | Ser | Ala | Gly | Cys  | Lys | Ser | Phe |     |
|     |     | 915 |     |     |     |     | 920  |     |     |     |     | 925  |     |     |     |     |
| Ser | Leu | Thr | Gln | Lys | Ile | Gln | Tyr  | Ala | Ser | Glu | Phe | Pro  | Asp | Gln | Ser |     |
|     | 930 |     |     |     |     | 935 |      |     |     |     | 940 |      |     |     |     |     |
| Tyr | Val | Ala | Ile | Ala | Ala | Ser | Ser  | Trp | Val | Asp | Asp | Phe  | Ile | Asp | Trp |     |
| 945 |     |     |     |     | 950 |     |      |     |     | 955 |     |      |     |     | 960 |     |
| Leu | Thr | Pro | Ser | Ser | Ser | Cys | Cys  | Arg | Leu | Tyr | Ile | Arg  | Gly | Pro | His |     |
|     |     |     |     | 965 |     |     |      |     | 970 |     |     |      |     | 975 |     |     |
| Lys | Asp | Glu | Phe | Cys | Pro | Ser | Thr  | Asp | Thr | Ser | Phe | Asn  | Cys | Leu | Lys |     |
|     |     |     | 980 |     |     |     |      | 985 |     |     |     |      | 990 |     |     |     |
| Asn | Cys | Met | Asn | Arg | Thr | Leu | Gly  | Pro | Val | Arg | Pro | Thr  | Ala | Glu | Gln |     |
|     |     | 995 |     |     |     |     | 1000 |     |     |     |     | 1005 |     |     |     |     |

|      |     |     |     |     |     |      |     |     |     |     |      |     |     |     |
|------|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|
| Phe  | His | Lys | Tyr | Leu | Pro | Trp  | Phe | Leu | Asn | Asp | Pro  | Pro | Asn | Ile |
| 1010 |     |     |     |     |     | 1015 |     |     |     |     | 1020 |     |     |     |
| Arg  | Cys | Pro | Lys | Gly | Gly | Leu  | Ala | Ala | Tyr | Arg | Thr  | Ser | Val | Asn |
| 1025 |     |     |     |     |     | 1030 |     |     |     |     | 1035 |     |     |     |
| Leu  | Ser | Ser | Asp | Gly | Gln | Val  | Ile | Ala | Ser | Gln | Phe  | Met | Ala | Tyr |
| 1040 |     |     |     |     |     | 1045 |     |     |     |     | 1050 |     |     |     |
| His  | Lys | Pro | Leu | Arg | Asn | Ser  | Gln | Asp | Phe | Thr | Glu  | Ala | Leu | Arg |
| 1055 |     |     |     |     |     | 1060 |     |     |     |     | 1065 |     |     |     |
| Ala  | Ser | Arg | Leu | Leu | Ala | Ala  | Asn | Ile | Thr | Ala | Asp  | Leu | Arg | Lys |
| 1070 |     |     |     |     |     | 1075 |     |     |     |     | 1080 |     |     |     |
| Val  | Pro | Gly | Thr | Asp | Pro | Asn  | Phe | Glu | Val | Phe | Pro  | Tyr | Thr | Ile |
| 1085 |     |     |     |     |     | 1090 |     |     |     |     | 1095 |     |     |     |
| Ser  | Asn | Val | Phe | Tyr | Gln | Gln  | Tyr | Leu | Thr | Val | Leu  | Pro | Glu | Gly |
| 1100 |     |     |     |     |     | 1105 |     |     |     |     | 1110 |     |     |     |
| Ile  | Phe | Thr | Leu | Ala | Leu | Cys  | Phe | Val | Pro | Thr | Phe  | Val | Val | Cys |
| 1115 |     |     |     |     |     | 1120 |     |     |     |     | 1125 |     |     |     |
| Tyr  | Leu | Leu | Leu | Gly | Leu | Asp  | Met | Cys | Ser | Gly | Ile  | Leu | Asn | Leu |
| 1130 |     |     |     |     |     | 1135 |     |     |     |     | 1140 |     |     |     |
| Leu  | Ser | Ile | Ile | Met | Ile | Leu  | Val | Asp | Thr | Ile | Gly  | Leu | Met | Ala |
| 1145 |     |     |     |     |     | 1150 |     |     |     |     | 1155 |     |     |     |
| Val  | Trp | Gly | Ile | Ser | Tyr | Asn  | Ala | Val | Ser | Leu | Ile  | Asn | Leu | Val |
| 1160 |     |     |     |     |     | 1165 |     |     |     |     | 1170 |     |     |     |
| Thr  | Ala | Val | Gly | Met | Ser | Val  | Glu | Phe | Val | Ser | His  | Ile | Thr | Arg |
| 1175 |     |     |     |     |     | 1180 |     |     |     |     | 1185 |     |     |     |
| Ser  | Phe | Ala | Val | Ser | Thr | Lys  | Pro | Thr | Arg | Leu | Glu  | Arg | Ala | Lys |
| 1190 |     |     |     |     |     | 1195 |     |     |     |     | 1200 |     |     |     |
| Asp  | Ala | Thr | Val | Phe | Met | Gly  | Ser | Ala | Val | Phe | Ala  | Gly | Val | Ala |
| 1205 |     |     |     |     |     | 1210 |     |     |     |     | 1215 |     |     |     |
| Met  | Thr | Asn | Phe | Pro | Gly | Ile  | Leu | Ile | Leu | Gly | Phe  | Ala | Gln | Ala |
| 1220 |     |     |     |     |     | 1225 |     |     |     |     | 1230 |     |     |     |

Gln Leu Ile Gln Ile Phe Phe Phe Arg Leu Asn Leu Leu Ile Thr  
 1235 1240 1245

Leu Leu Gly Leu Leu His Gly Leu Val Phe Leu Pro Val Val Leu  
 1250 1255 1260

Ser Tyr Leu Gly Pro Asp Val Asn Gln Ala Leu Val Gln Glu Glu  
 1265 1270 1275

Lys Leu Ala Ser Glu Ala Ala Val Ala Pro Glu Pro Ser Cys Pro  
 1280 1285 1290

Gln Tyr Pro Ser Pro Ala Asp Ala Asp Ala Asn Val Asn Tyr Gly  
 1295 1300 1305

Phe Ala Pro Glu Leu Ala His Gly Ala Asn Ala Ala Arg Ser Ser  
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Leu Pro Lys Ser Asp Gln Lys Phe  
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 1 5 10 15  
 cgc ttg gcc cag agt gag cct tac aca acc atc cac cag cct ggc tac 96  
 Arg Leu Ala Gln Ser Glu Pro Tyr Thr Thr Ile His Gln Pro Gly Tyr  
 20 25 30  
 tgc gcc ttc tat gac gaa tgt ggg aag aac cca gag ctg tct gga agc 144  
 Cys Ala Phe Tyr Asp Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Ser  
 35 40 45

|   |     |
|---|-----|
| ctc atg aca ctc tcc aac gtg tcc tgc ctg tcc aac acg ccg gcc cgc | 192 |
| Leu Met Thr Leu Ser Asn Val Ser Cys Leu Ser Asn Thr Pro Ala Arg |     |
| 50 55 60  |     |
| aag atc aca ggt gat cac ctg atc cta tta cag aag atc tgc ccc cgc | 240 |
| Lys Ile Thr Gly Asp His Leu Ile Leu Leu Gln Lys Ile Cys Pro Arg |     |
| 65 70 75 80   |     |
| ctc tac acc ggc ccc aac acc caa gcc tgc tgc tcc gcc aag cag ctg | 288 |
| Leu Tyr Thr Gly Pro Asn Thr Gln Ala Cys Cys Ser Ala Lys Gln Leu |     |
| 85 90 95  |     |
| gta tca ctg gaa gcg agt ctg tgc atc acc aag gcc ctc ctc acc cgc | 336 |
| Val Ser Leu Glu Ala Ser Leu Ser Ile Thr Lys Ala Leu Leu Thr Arg |     |
| 100 105 110   |     |
| tgc cca gcc tgc tct gac aat ttt gtg aac ctg cac tgc cac aac acg | 384 |
| Cys Pro Ala Cys Ser Asp Asn Phe Val Asn Leu His Cys His Asn Thr |     |
| 115 120 125   |     |
| tgc agc ccc aat cag agc ctc ttc atc aat gtg acc cgc gtg gcc cag | 432 |
| Cys Ser Pro Asn Gln Ser Leu Phe Ile Asn Val Thr Arg Val Ala Gln |     |
| 130 135 140   |     |
| cta ggg gct gga caa ctc cca gct gtg gtg gcc tat gag gcc ttc tac | 480 |
| Leu Gly Ala Gly Gln Leu Pro Ala Val Val Ala Tyr Glu Ala Phe Tyr |     |
| 145 150 155 160   |     |
| cag cat agc ttt gcc gag cag agc tat gac tcc tgc agc cgt gtg cgc | 528 |
| Gln His Ser Phe Ala Glu Gln Ser Tyr Asp Ser Cys Ser Arg Val Arg |     |
| 165 170 175   |     |
| gtc cct gca gct gcc acg ctg gct gtg ggc acc atg tgt ggc gtg tat | 576 |
| Val Pro Ala Ala Ala Thr Leu Ala Val Gly Thr Met Cys Gly Val Tyr |     |
| 180 185 190   |     |
| ggc tct gcc ctt tgc aat gcc cag cgc tgg ctc aac ttc cag gga gac | 624 |
| Gly Ser Ala Leu Cys Asn Ala Gln Arg Trp Leu Asn Phe Gln Gly Asp |     |
| 195 200 205   |     |
| aca ggc aat ggt ctg gcc cca ctg gac atc acc ttc cac ctc ttg gag | 672 |
| Thr Gly Asn Gly Leu Ala Pro Leu Asp Ile Thr Phe His Leu Leu Glu |     |
| 210 215 220   |     |
| cct ggc cag gcc gtg ggg agt ggg att cag cct ctg aat gag ggg gtt | 720 |
| Pro Gly Gln Ala Val Gly Ser Gly Ile Gln Pro Leu Asn Glu Gly Val |     |
| 225 230 235 240   |     |
| gca cgt tgc aat gag tcc caa ggt gac gac gtg gcg acc tgc tcc tgc | 768 |
| Ala Arg Cys Asn Glu Ser Gln Gly Asp Asp Val Ala Thr Cys Ser Cys |     |
| 245 250 255   |     |
| caa gac tgt gct gca tcc tgt cct gcc ata gcc cgc ccc cag gcc ctc | 816 |
| Gln Asp Cys Ala Ala Ser Cys Pro Ala Ile Ala Arg Pro Gln Ala Leu |     |
| 260 265 270   |     |
| gac tcc acc ttc tac ctg ggc cag atg ccg ggc agt ctg gtc ctc atc | 864 |
| Asp Ser Thr Phe Tyr Leu Gly Gln Met Pro Gly Ser Leu Val Leu Ile |     |
| 275 280 285   |     |

|   |      |
|---|------|
| atc atc ctc tgc tct gtc ttc gct gtg gtc acc atc ctg ctt gtg gga<br>Ile Ile Leu Cys Ser Val Phe Ala Val Val Thr Ile Leu Leu Val Gly<br>290 295 300     | 912  |
| ttc cgt gtg gcc ccc gcc agg gac aaa agc aag atg gtg gac ccc aag<br>Phe Arg Val Ala Pro Ala Arg Asp Lys Ser Lys Met Val Asp Pro Lys<br>305 310 315 320 | 960  |
| aag ggc acc agc ctc tct gac aag ctc agc ttc tcc acc cac acc ctc<br>Lys Gly Thr Ser Leu Ser Asp Lys Leu Ser Phe Ser Thr His Thr Leu<br>325 330 335     | 1008 |
| ctt ggc cag ttc ttc cag ggc tgg ggc acg tgg gtg gct tcg tgg cct<br>Leu Gly Gln Phe Phe Gln Gly Trp Gly Thr Trp Val Ala Ser Trp Pro<br>340 345 350     | 1056 |
| ctg acc atc ttg gtg cta tct gtc atc ccg gtg gtg gcc ttg gca gcg<br>Leu Thr Ile Leu Val Leu Ser Val Ile Pro Val Val Ala Leu Ala Ala<br>355 360 365     | 1104 |
| ggc ctg gtc ttt aca gaa ctc act acg gac ccc gtg gag ctg tgg tcg<br>Gly Leu Val Phe Thr Glu Leu Thr Thr Asp Pro Val Glu Leu Trp Ser<br>370 375 380     | 1152 |
| gcc ccc aac agc caa gcc cgg agt gag aaa gct ttc cat gac cag cat<br>Ala Pro Asn Ser Gln Ala Arg Ser Glu Lys Ala Phe His Asp Gln His<br>385 390 395 400 | 1200 |
| ttc ggc ccc ttc ttc cga acc aac cag gtg atc ctg acg gct cct aac<br>Phe Gly Pro Phe Phe Arg Thr Asn Gln Val Ile Leu Thr Ala Pro Asn<br>405 410 415     | 1248 |
| cgg tcc agc tac agg tat gac tct ctg ctg ctg ggg ccc aag aac ttc<br>Arg Ser Ser Tyr Arg Tyr Asp Ser Leu Leu Leu Gly Pro Lys Asn Phe<br>420 425 430     | 1296 |
| agc gga atc ctg gac ctg gac ttg ctg ctg gag ctg cta gag ctg cag<br>Ser Gly Ile Leu Asp Leu Asp Leu Leu Leu Glu Leu Glu Leu Gln<br>435 440 445         | 1344 |
| gag agg ctg cgg cac ctc cag gta tgg tcg ccc gaa gca cag cgc aac<br>Glu Arg Leu Arg His Leu Gln Val Trp Ser Pro Glu Ala Gln Arg Asn<br>450 455 460     | 1392 |
| atc tcc ctg cag gac atc tgc tac gcc ccc ctc aat ccg gac aat acc<br>Ile Ser Leu Gln Asp Ile Cys Tyr Ala Pro Leu Asn Pro Asp Asn Thr<br>465 470 475 480 | 1440 |
| agt ctc tac gac tgc tgc atc aac agc ctc ctg cag tat ttc cag aac<br>Ser Leu Tyr Asp Cys Cys Ile Asn Ser Leu Leu Gln Tyr Phe Gln Asn<br>485 490 495     | 1488 |
| aac cgc acg ctc ctg ctg ctc aca gcc aac cag aca ctg atg ggg cag<br>Asn Arg Thr Leu Leu Leu Leu Thr Ala Asn Gln Thr Leu Met Gly Gln<br>500 505 510     | 1536 |
| acc tcc caa gtc gac tgg aag gac cat ttt ctg tac tgt gcc aat gcc<br>Thr Ser Gln Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala<br>515 520 525     | 1584 |
| ccg ctc acc ttc aag gat ggc aca gcc ctg gcc ctg agc tgc atg gct   | 1632 |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |  |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|--|
| Pro | Leu | Thr | Phe | Lys | Asp | Gly | Thr | Ala | Leu | Ala | Leu | Ser | Cys | Met | Ala |      |  |
| 530 |     |     |     |     |     | 535 |     |     |     |     | 540 |     |     |     |     |      |  |
| gac | tac | ggg | gcc | cct | gtc | ttc | ccc | ttc | ctt | gcc | att | ggg | ggg | tac | aaa | 1680 |  |
| Asp | Tyr | Gly | Ala | Pro | Val | Phe | Pro | Phe | Leu | Ala | Ile | Gly | Gly | Tyr | Lys |      |  |
| 545 |     |     |     |     | 550 |     |     |     |     | 555 |     |     |     |     | 560 |      |  |
| gga | aag | gac | tat | tct | gag | gca | gag | gcc | ctg | atc | atg | acg | ttc | tcc | ctc | 1728 |  |
| Gly | Lys | Asp | Tyr | Ser | Glu | Ala | Glu | Ala | Leu | Ile | Met | Thr | Phe | Ser | Leu |      |  |
|     |     |     |     | 565 |     |     |     |     | 570 |     |     |     |     | 575 |     |      |  |
| aac | aat | tac | cct | gcc | ggg | gac | ccc | cgt | ctg | gcc | cag | gcc | aag | ctg | tgg | 1776 |  |
| Asn | Asn | Tyr | Pro | Ala | Gly | Asp | Pro | Arg | Leu | Ala | Gln | Ala | Lys | Leu | Trp |      |  |
|     |     |     | 580 |     |     |     |     | 585 |     |     |     |     | 590 |     |     |      |  |
| gag | gag | gcc | ttc | tta | gag | gaa | atg | cga | gcc | ttc | cag | cgt | cgg | atg | gct | 1824 |  |
| Glu | Glu | Ala | Phe | Leu | Glu | Glu | Met | Arg | Ala | Phe | Gln | Arg | Arg | Met | Ala |      |  |
|     |     | 595 |     |     |     |     | 600 |     |     |     |     | 605 |     |     |     |      |  |
| ggc | atg | ttc | cag | gtc | acg | ttc | acg | gct | gag | cgc | tct | ctg | gaa | gac | gag | 1872 |  |
| Gly | Met | Phe | Gln | Val | Thr | Phe | Thr | Ala | Glu | Arg | Ser | Leu | Glu | Asp | Glu |      |  |
|     | 610 |     |     |     |     |     | 615 |     |     |     |     | 620 |     |     |     |      |  |
| atc | aat | cgc | acc | aca | gct | gaa | gac | ctg | ccc | atc | ttt | gcc | acc | agc | tac | 1920 |  |
| Ile | Asn | Arg | Thr | Thr | Ala | Glu | Asp | Leu | Pro | Ile | Phe | Ala | Thr | Ser | Tyr |      |  |
| 625 |     |     |     |     | 630 |     |     |     |     | 635 |     |     |     |     | 640 |      |  |
| att | gtc | ata | ttc | ctg | tac | atc | tct | ctg | gcc | ctg | ggc | agc | tat | tcc | agc | 1968 |  |
| Ile | Val | Ile | Phe | Leu | Tyr | Ile | Ser | Leu | Ala | Leu | Gly | Ser | Tyr | Ser | Ser |      |  |
|     |     |     |     | 645 |     |     |     |     | 650 |     |     |     |     | 655 |     |      |  |
| tgg | agc | cga | gtg | atg | gtg | gac | tcc | aag | gcc | acg | ctg | ggc | ctc | ggc | ggg | 2016 |  |
| Trp | Ser | Arg | Val | Met | Val | Asp | Ser | Lys | Ala | Thr | Leu | Gly | Leu | Gly | Gly |      |  |
|     |     |     | 660 |     |     |     |     | 665 |     |     |     |     | 670 |     |     |      |  |
| gtg | gcc | gtg | gtc | ctg | gga | gca | gtc | atg | gct | gcc | atg | ggc | ttc | ttc | tcc | 2064 |  |
| Val | Ala | Val | Val | Leu | Gly | Ala | Val | Met | Ala | Ala | Met | Gly | Phe | Phe | Ser |      |  |
|     |     | 675 |     |     |     |     | 680 |     |     |     |     | 685 |     |     |     |      |  |
| tac | ttg | ggt | atc | cgc | tcc | tcc | ctg | gtc | atc | ctg | caa | gtg | gtt | cct | ttc | 2112 |  |
| Tyr | Leu | Gly | Ile | Arg | Ser | Ser | Leu | Val | Ile | Leu | Gln | Val | Val | Pro | Phe |      |  |
|     | 690 |     |     |     |     | 695 |     |     |     |     | 700 |     |     |     |     |      |  |
| ctg | gtg | ctg | tcc | gtg | ggg | gct | gat | aac | atc | ttc | atc | ttt | gtt | ctc | gag | 2160 |  |
| Leu | Val | Leu | Ser | Val | Gly | Ala | Asp | Asn | Ile | Phe | Ile | Phe | Val | Leu | Glu |      |  |
| 705 |     |     |     |     | 710 |     |     |     | 715 |     |     |     |     | 720 |     |      |  |
| tac | cag | agg | ctg | ccc | cgg | agg | cct | ggg | gag | cca | cga | gag | gtc | cac | att | 2208 |  |
| Tyr | Gln | Arg | Leu | Pro | Arg | Arg | Pro | Gly | Glu | Pro | Arg | Glu | Val | His | Ile |      |  |
|     |     |     |     | 725 |     |     |     |     | 730 |     |     |     |     | 735 |     |      |  |
| ggg | cga | gcc | cta | ggc | agg | gtg | gct | ccc | agc | atg | ctg | ttg | tgc | agc | ctc | 2256 |  |
| Gly | Arg | Ala | Leu | Gly | Arg | Val | Ala | Pro | Ser | Met | Leu | Leu | Cys | Ser | Leu |      |  |
|     |     |     | 740 |     |     |     |     | 745 |     |     |     |     | 750 |     |     |      |  |
| tct | gag | gcc | atc | tgc | ttc | ttc | cta | ggg | gcc | ctg | acc | ccc | atg | cca | gct | 2304 |  |
| Ser | Glu | Ala | Ile | Cys | Phe | Phe | Leu | Gly | Ala | Leu | Thr | Pro | Met | Pro | Ala |      |  |
|     |     | 755 |     |     |     |     | 760 |     |     |     |     | 765 |     |     |     |      |  |
| gtg | cgg | acc | ttt | gcc | ctg | acc | tct | ggc | ctt | gca | gtg | atc | ctt | gac | ttc | 2352 |  |
| Val | Arg | Thr | Phe | Ala | Leu | Thr | Ser | Gly | Leu | Ala | Val | Ile | Leu | Asp | Phe |      |  |



| 770   | 775 | 780 |      |
|---|-----|-----|------|
| ctc ctg cag atg tca gcc ttt gtg gcc ctg ctc tcc ctg gac agc aag<br>Leu Leu Gln Met Ser Ala Phe Val Ala Leu Leu Ser Leu Asp Ser Lys<br>785 790 795 800 |     |     | 2400 |
| agg cag gag gcc tcc cgg ttg gac gtc tgc tgc tgt gtc aag ccc cag<br>Arg Gln Glu Ala Ser Arg Leu Asp Val Cys Cys Cys Val Lys Pro Gln<br>805 810 815     |     |     | 2448 |
| gag ctg ccc ccg cct ggc cag gga gag ggg ctc ctg ctt ggc ttc ttc<br>Glu Leu Pro Pro Gly Gln Gly Glu Gly Leu Leu Leu Gly Phe Phe<br>820 825 830         |     |     | 2496 |
| caa aag gct tat gcc ccc ttc ctg ctg cac tgg atc act cga ggt gtt<br>Gln Lys Ala Tyr Ala Pro Phe Leu Leu His Trp Ile Thr Arg Gly Val<br>835 840 845     |     |     | 2544 |
| gtg ctg ctg ctg ttt ctc gcc ctg ttc gga gtg agc ctc tac tcc atg<br>Val Leu Leu Leu Phe Leu Ala Leu Phe Gly Val Ser Leu Tyr Ser Met<br>850 855 860     |     |     | 2592 |
| tgc cac atc agc gtg gga ctg gac cag gag ctg gcc ctg ccc aag gac<br>Cys His Ile Ser Val Gly Leu Asp Gln Glu Leu Ala Leu Pro Lys Asp<br>865 870 875 880 |     |     | 2640 |
| tcg tac ctg ctt gac tat ttc ctc ttt ctg aac cgc tac ttc gag gtg<br>Ser Tyr Leu Leu Asp Tyr Phe Leu Phe Leu Asn Arg Tyr Phe Glu Val<br>885 890 895     |     |     | 2688 |
| ggg gcc ccg gtg tac ttt gtt acc acc ttg ggc tac aac ttc tcc agc<br>Gly Ala Pro Val Tyr Phe Val Thr Thr Leu Gly Tyr Asn Phe Ser Ser<br>900 905 910     |     |     | 2736 |
| gag gct ggg atg aat gcc atc tgc tcc agt gca ggc tgc aac aac ttc<br>Glu Ala Gly Met Asn Ala Ile Cys Ser Ser Ala Gly Cys Asn Asn Phe<br>915 920 925     |     |     | 2784 |
| tcc ttc acc cag aag atc cag tat gcc aca gag ttc cct gag cag tct<br>Ser Phe Thr Gln Lys Ile Gln Tyr Ala Thr Glu Phe Pro Glu Gln Ser<br>930 935 940     |     |     | 2832 |
| tac ctg gcc atc cct gcc tcc tcc tgg gtg gat gac ttc att gac tgg<br>Tyr Leu Ala Ile Pro Ala Ser Ser Trp Val Asp Asp Phe Ile Asp Trp<br>945 950 955 960 |     |     | 2880 |
| ctg acc ccg tcc tcc tgc tgc cgc ctt tat ata tct ggc ccc aat aag<br>Leu Thr Pro Ser Ser Cys Cys Arg Leu Tyr Ile Ser Gly Pro Asn Lys<br>965 970 975     |     |     | 2928 |
| gac aag ttc tgc ccc tcg acc gtc aac tct ctg aac tgc cta aag aac<br>Asp Lys Phe Cys Pro Ser Thr Val Asn Ser Leu Asn Cys Leu Lys Asn<br>980 985 990     |     |     | 2976 |
| tgc atg agc atc acg atg ggc tct gtg agg ccc tcg gtg gag cag ttc<br>Cys Met Ser Ile Thr Met Gly Ser Val Arg Pro Ser Val Glu Gln Phe<br>995 1000 1005   |     |     | 3024 |
| cat aag tat ctt ccc tgg ttc ctg aac gac cgg ccc aac atc aaa<br>His Lys Tyr Leu Pro Trp Phe Leu Asn Asp Arg Pro Asn Ile Lys<br>1010 1015 1020          |     |     | 3069 |

|     |      |     |     |     |     |      |     |     |     |     |      |     |     |     |      |
|-----|------|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|------|
| tgt | ccc  | aaa | ggc | ggc | ctg | gca  | gca | tac | agc | acc | tct  | gtg | aac | ttg | 3114 |
| Cys | Pro  | Lys | Gly | Gly | Leu | Ala  | Ala | Tyr | Ser | Thr | Ser  | Val | Asn | Leu |      |
|     | 1025 |     |     |     |     | 1030 |     |     |     |     | 1035 |     |     |     |      |
| act | tca  | gat | ggc | cag | gtt | tta  | gcc | tcc | agg | ttc | atg  | gcc | tat | cac | 3159 |
| Thr | Ser  | Asp | Gly | Gln | Val | Leu  | Ala | Ser | Arg | Phe | Met  | Ala | Tyr | His |      |
|     | 1040 |     |     |     |     | 1045 |     |     |     |     | 1050 |     |     |     |      |
| aag | ccc  | ctg | aaa | aac | tca | cag  | gat | tac | aca | gaa | gct  | ctg | cgg | gca | 3204 |
| Lys | Pro  | Leu | Lys | Asn | Ser | Gln  | Asp | Tyr | Thr | Glu | Ala  | Leu | Arg | Ala |      |
|     | 1055 |     |     |     |     | 1060 |     |     |     |     | 1065 |     |     |     |      |
| gct | cga  | gag | ctg | gca | gcc | aac  | atc | act | gct | gac | ctg  | cgg | aaa | gtg | 3249 |
| Ala | Arg  | Glu | Leu | Ala | Ala | Asn  | Ile | Thr | Ala | Asp | Leu  | Arg | Lys | Val |      |
|     | 1070 |     |     |     |     | 1075 |     |     |     |     | 1080 |     |     |     |      |
| cct | gga  | aca | gac | ccg | gct | ttt  | gag | gtc | ttc | ccc | tac  | acg | atc | acc | 3294 |
| Pro | Gly  | Thr | Asp | Pro | Ala | Phe  | Glu | Val | Phe | Pro | Tyr  | Thr | Ile | Thr |      |
|     | 1085 |     |     |     |     | 1090 |     |     |     |     | 1095 |     |     |     |      |
| aat | gtg  | ttt | tat | gag | cag | tac  | ctg | acc | atc | ctc | cct  | gag | ggg | ctc | 3339 |
| Asn | Val  | Phe | Tyr | Glu | Gln | Tyr  | Leu | Thr | Ile | Leu | Pro  | Glu | Gly | Leu |      |
|     | 1100 |     |     |     |     | 1105 |     |     |     |     | 1110 |     |     |     |      |
| ttc | atg  | ctc | agc | ctc | tgc | ctt  | gtg | ccc | acc | ttc | gct  | gtc | tcc | tgc | 3384 |
| Phe | Met  | Leu | Ser | Leu | Cys | Leu  | Val | Pro | Thr | Phe | Ala  | Val | Ser | Cys |      |
|     | 1115 |     |     |     |     | 1120 |     |     |     |     | 1125 |     |     |     |      |
| ctc | ctg  | ctg | ggc | ctg | gac | ctg  | cgc | tcc | ggc | ctc | ctc  | aac | ctg | ctc | 3429 |
| Leu | Leu  | Leu | Gly | Leu | Asp | Leu  | Arg | Ser | Gly | Leu | Leu  | Asn | Leu | Leu |      |
|     | 1130 |     |     |     |     | 1135 |     |     |     |     | 1140 |     |     |     |      |
| tcc | att  | gtc | atg | atc | ctc | gtg  | gac | act | gtc | ggc | ttc  | atg | gcc | ctg | 3474 |
| Ser | Ile  | Val | Met | Ile | Leu | Val  | Asp | Thr | Val | Gly | Phe  | Met | Ala | Leu |      |
|     | 1145 |     |     |     |     | 1150 |     |     |     |     | 1155 |     |     |     |      |
| tgg | gac  | atc | agt | tac | aat | gct  | gtg | tcc | ctc | atc | aac  | ctg | gtc | tcg | 3519 |
| Trp | Asp  | Ile | Ser | Tyr | Asn | Ala  | Val | Ser | Leu | Ile | Asn  | Leu | Val | Ser |      |
|     | 1160 |     |     |     |     | 1165 |     |     |     |     | 1170 |     |     |     |      |
| gcg | gtg  | ggc | atg | tct | gtg | gag  | ttt | gtg | tcc | cac | att  | acc | cgc | tcc | 3564 |
| Ala | Val  | Gly | Met | Ser | Val | Glu  | Phe | Val | Ser | His | Ile  | Thr | Arg | Ser |      |
|     | 1175 |     |     |     |     | 1180 |     |     |     |     | 1185 |     |     |     |      |
| ttt | gcc  | atc | agc | acc | aag | ccc  | acc | tgg | ctg | gag | agg  | gcc | aaa | gag | 3609 |
| Phe | Ala  | Ile | Ser | Thr | Lys | Pro  | Thr | Trp | Leu | Glu | Arg  | Ala | Lys | Glu |      |
|     | 1190 |     |     |     |     | 1195 |     |     |     |     | 1200 |     |     |     |      |
| gcc | acc  | atc | tct | atg | gga | agt  | gcg | gtg | ttt | gca | ggt  | gtg | gcc | atg | 3654 |
| Ala | Thr  | Ile | Ser | Met | Gly | Ser  | Ala | Val | Phe | Ala | Gly  | Val | Ala | Met |      |
|     | 1205 |     |     |     |     | 1210 |     |     |     |     | 1215 |     |     |     |      |
| acc | aac  | ctg | cct | ggc | atc | ctt  | gtc | ctg | ggc | ctc | gcc  | aag | gcc | cag | 3699 |
| Thr | Asn  | Leu | Pro | Gly | Ile | Leu  | Val | Leu | Gly | Leu | Ala  | Lys | Ala | Gln |      |
|     | 1220 |     |     |     |     | 1225 |     |     |     |     | 1230 |     |     |     |      |
| ctc | att  | cag | atc | ttc | ttc | ttc  | cgc | ctc | aac | ctc | ctg  | atc | act | ctg | 3744 |
| Leu | Ile  | Gln | Ile | Phe | Phe | Phe  | Arg | Leu | Asn | Leu | Leu  | Ile | Thr | Leu |      |
|     | 1235 |     |     |     |     | 1240 |     |     |     |     | 1245 |     |     |     |      |



Val Ser Leu Glu Ala Ser Leu Ser Ile Thr Lys Ala Leu Leu Thr Arg  
 100 105 110  
 Cys Pro Ala Cys Ser Asp Asn Phe Val Asn Leu His Cys His Asn Thr  
 115 120 125  
 Cys Ser Pro Asn Gln Ser Leu Phe Ile Asn Val Thr Arg Val Ala Gln  
 130 135 140  
 Leu Gly Ala Gly Gln Leu Pro Ala Val Val Ala Tyr Glu Ala Phe Tyr  
 145 150 155 160  
 Gln His Ser Phe Ala Glu Gln Ser Tyr Asp Ser Cys Ser Arg Val Arg  
 165 170 175  
 Val Pro Ala Ala Ala Thr Leu Ala Val Gly Thr Met Cys Gly Val Tyr  
 180 185 190  
 Gly Ser Ala Leu Cys Asn Ala Gln Arg Trp Leu Asn Phe Gln Gly Asp  
 195 200 205  
 Thr Gly Asn Gly Leu Ala Pro Leu Asp Ile Thr Phe His Leu Leu Glu  
 210 215 220  
 Pro Gly Gln Ala Val Gly Ser Gly Ile Gln Pro Leu Asn Glu Gly Val  
 225 230 235 240  
 Ala Arg Cys Asn Glu Ser Gln Gly Asp Asp Val Ala Thr Cys Ser Cys  
 245 250 255  
 Gln Asp Cys Ala Ala Ser Cys Pro Ala Ile Ala Arg Pro Gln Ala Leu  
 260 265 270  
 Asp Ser Thr Phe Tyr Leu Gly Gln Met Pro Gly Ser Leu Val Leu Ile  
 275 280 285  
 Ile Ile Leu Cys Ser Val Phe Ala Val Val Thr Ile Leu Leu Val Gly  
 290 295 300  
 Phe Arg Val Ala Pro Ala Arg Asp Lys Ser Lys Met Val Asp Pro Lys  
 305 310 315 320  
 Lys Gly Thr Ser Leu Ser Asp Lys Leu Ser Phe Ser Thr His Thr Leu  
 325 330 335  
 Leu Gly Gln Phe Phe Gln Gly Trp Gly Thr Trp Val Ala Ser Trp Pro

|   |     |     |
|---|-----|-----|
| 340   | 345 | 350 |
| Leu Thr Ile Leu Val Leu Ser Val Ile Pro Val Val Ala Leu Ala Ala |     |     |
| 355   | 360 | 365 |
| Gly Leu Val Phe Thr Glu Leu Thr Thr Asp Pro Val Glu Leu Trp Ser |     |     |
| 370   | 375 | 380 |
| Ala Pro Asn Ser Gln Ala Arg Ser Glu Lys Ala Phe His Asp Gln His |     |     |
| 385   | 390 | 395 |
| Phe Gly Pro Phe Phe Arg Thr Asn Gln Val Ile Leu Thr Ala Pro Asn |     |     |
| 405   | 410 | 415 |
| Arg Ser Ser Tyr Arg Tyr Asp Ser Leu Leu Leu Gly Pro Lys Asn Phe |     |     |
| 420   | 425 | 430 |
| Ser Gly Ile Leu Asp Leu Asp Leu Leu Leu Glu Leu Leu Glu Leu Gln |     |     |
| 435   | 440 | 445 |
| Glu Arg Leu Arg His Leu Gln Val Trp Ser Pro Glu Ala Gln Arg Asn |     |     |
| 450   | 455 | 460 |
| Ile Ser Leu Gln Asp Ile Cys Tyr Ala Pro Leu Asn Pro Asp Asn Thr |     |     |
| 465   | 470 | 475 |
| Ser Leu Tyr Asp Cys Cys Ile Asn Ser Leu Leu Gln Tyr Phe Gln Asn |     |     |
| 485   | 490 | 495 |
| Asn Arg Thr Leu Leu Leu Leu Thr Ala Asn Gln Thr Leu Met Gly Gln |     |     |
| 500   | 505 | 510 |
| Thr Ser Gln Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala |     |     |
| 515   | 520 | 525 |
| Pro Leu Thr Phe Lys Asp Gly Thr Ala Leu Ala Leu Ser Cys Met Ala |     |     |
| 530   | 535 | 540 |
| Asp Tyr Gly Ala Pro Val Phe Pro Phe Leu Ala Ile Gly Gly Tyr Lys |     |     |
| 545   | 550 | 555 |
| Gly Lys Asp Tyr Ser Glu Ala Glu Ala Leu Ile Met Thr Phe Ser Leu |     |     |
| 565   | 570 | 575 |
| Asn Asn Tyr Pro Ala Gly Asp Pro Arg Leu Ala Gln Ala Lys Leu Trp |     |     |
| 580   | 585 | 590 |

Glu Glu Ala Phe Leu Glu Glu Met Arg Ala Phe Gln Arg Arg Met Ala  
595 600 605

Gly Met Phe Gln Val Thr Phe Thr Ala Glu Arg Ser Leu Glu Asp Glu  
610 615 620

Ile Asn Arg Thr Thr Ala Glu Asp Leu Pro Ile Phe Ala Thr Ser Tyr  
625 630 635 640

Ile Val Ile Phe Leu Tyr Ile Ser Leu Ala Leu Gly Ser Tyr Ser Ser  
645 650 655

Trp Ser Arg Val Met Val Asp Ser Lys Ala Thr Leu Gly Leu Gly Gly  
660 665 670

Val Ala Val Val Leu Gly Ala Val Met Ala Ala Met Gly Phe Phe Ser  
675 680 685

Tyr Leu Gly Ile Arg Ser Ser Leu Val Ile Leu Gln Val Val Pro Phe  
690 695 700

Leu Val Leu Ser Val Gly Ala Asp Asn Ile Phe Ile Phe Val Leu Glu  
705 710 715 720

Tyr Gln Arg Leu Pro Arg Arg Pro Gly Glu Pro Arg Glu Val His Ile  
725 730 735

Gly Arg Ala Leu Gly Arg Val Ala Pro Ser Met Leu Leu Cys Ser Leu  
740 745 750

Ser Glu Ala Ile Cys Phe Phe Leu Gly Ala Leu Thr Pro Met Pro Ala  
755 760 765

Val Arg Thr Phe Ala Leu Thr Ser Gly Leu Ala Val Ile Leu Asp Phe  
770 775 780

Leu Leu Gln Met Ser Ala Phe Val Ala Leu Leu Ser Leu Asp Ser Lys  
785 790 795 800

Arg Gln Glu Ala Ser Arg Leu Asp Val Cys Cys Cys Val Lys Pro Gln  
805 810 815

Glu Leu Pro Pro Pro Gly Gln Gly Glu Gly Leu Leu Leu Gly Phe Phe  
820 825 830

Gln Lys Ala Tyr Ala Pro Phe Leu Leu His Trp Ile Thr Arg Gly Val  
 835 840 845

Val Leu Leu Leu Phe Leu Ala Leu Phe Gly Val Ser Leu Tyr Ser Met  
 850 855 860

Cys His Ile Ser Val Gly Leu Asp Gln Glu Leu Ala Leu Pro Lys Asp  
 865 870 875 880

Ser Tyr Leu Leu Asp Tyr Phe Leu Phe Leu Asn Arg Tyr Phe Glu Val  
 885 890 895

Gly Ala Pro Val Tyr Phe Val Thr Thr Leu Gly Tyr Asn Phe Ser Ser  
 900 905 910

Glu Ala Gly Met Asn Ala Ile Cys Ser Ser Ala Gly Cys Asn Asn Phe  
 915 920 925

Ser Phe Thr Gln Lys Ile Gln Tyr Ala Thr Glu Phe Pro Glu Gln Ser  
 930 935 940

Tyr Leu Ala Ile Pro Ala Ser Ser Trp Val Asp Asp Phe Ile Asp Trp  
 945 950 955 960

Leu Thr Pro Ser Ser Cys Cys Arg Leu Tyr Ile Ser Gly Pro Asn Lys  
 965 970 975

Asp Lys Phe Cys Pro Ser Thr Val Asn Ser Leu Asn Cys Leu Lys Asn  
 980 985 990

Cys Met Ser Ile Thr Met Gly Ser Val Arg Pro Ser Val Glu Gln Phe  
 995 1000 1005

His Lys Tyr Leu Pro Trp Phe Leu Asn Asp Arg Pro Asn Ile Lys  
 1010 1015 1020

Cys Pro Lys Gly Gly Leu Ala Ala Tyr Ser Thr Ser Val Asn Leu  
 1025 1030 1035

Thr Ser Asp Gly Gln Val Leu Ala Ser Arg Phe Met Ala Tyr His  
 1040 1045 1050

Lys Pro Leu Lys Asn Ser Gln Asp Tyr Thr Glu Ala Leu Arg Ala  
 1055 1060 1065





|      |     |     |     |     |     |      |     |     |     |     |      |     |     |     |
|------|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|
| 1295 |     |     |     |     |     |      |     |     |     |     |      |     |     |     |
| His  | Ser | Phe | Glu | Gly | Ser | Ile  | Lys | Gly | Ala | Gly | Ala  | Ile | Ser | Asn |
| 1310 |     |     |     |     |     | 1315 |     |     |     |     | 1320 |     |     |     |

  

|      |     |     |     |     |     |      |     |     |
|------|-----|-----|-----|-----|-----|------|-----|-----|
| Phe  | Leu | Pro | Asn | Asn | Gly | Arg  | Gln | Phe |
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<210> 5

<211> 885

<212> DNA

<213> Rattus sp.

<400> 5

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| acatctgcta  | tgccccctc  | aacccatata  | acaccagcct | ctccgactgc  | tgtgtcaaca | 120 |
| gcctccttca  | gtacttccag | aacaaccgca  | ccctcctgat | gctcacggcc  | aaccagactc | 180 |
| tgaatggcca  | gacctccctg | gtggactgga  | aggaccattt | cctctactgt  | gcaaattgcc | 240 |
| ctctcacgtt  | caaagatggc | acgtctctgg  | ccctgagctg | catggctgac  | tacggggctc | 300 |
| ctgtcttccc  | cttccttget | gttgggggat  | accaaggcac | ggactattcc  | gaggcagaag | 360 |
| cgctgatcat  | aaccttctct | ctcaataact  | accccgtga  | tgatccccgc  | atggcccagg | 420 |
| ccaagctctg  | ggaggaggct | ttcttgaagg  | aaatggaatc | cttccagagg  | aacacaagtg | 480 |
| acaagttcca  | ggttgcgttc | tcagctgagc  | gctctctgga | ggatgagatc  | aaccgcacca | 540 |
| ccatccagga  | cctgcctgtc | tttgccgtca  | gtacattat  | cgtcttctctg | tacatctccc | 600 |
| tggccctggg  | cagctactcc | agatgcagcc  | gagtagcgg  | ggagtccaag  | gctactctgg | 660 |
| gcctaggtgg  | ggtgatagt  | tgctgggagc  | agttctggct | tgcattggggc | ttctaactcc | 720 |
| tacctgggtg  | tccccctctc | tctggttatc  | atccaagtgg | tacctttcct  | ggtgcttaag | 780 |
| ctgtggggagc | tggacacatc | tacatcctag  | acttgagtac | cagaggtacc  | taggaagccg | 840 |
| cggaacacgcg | aaaaggacac | attggggcgca | ccctgggcat | gtggc       |            | 885 |

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<211> 458

<212> DNA

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acggctttgc ccagaaactt gccacaggag ctaatgctgc tagaagctct ttgccccaaa 180  
gtgacaaaaa gttctaattg agtaggagct tgtccatgct tctgctgatg agggatcatg 240  
aaggctcttc ctctgggtgt cctcaaggcc tggggggagg ttgttcagag aaaaatggct 300  
ggcattcctg ccacgaggca accggcagct tggcactgac tccttggtct cataggtccc 360  
taaggcttgg tcagattact cctcatggag agactatctt aagtatctaa gctatcgatt 420  
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<210> 7

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<212> DNA

<213> Rattus sp.

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aggttatagc ctcccagttc atggcctacc acaagccctt aaggaaactca caggacttca 180  
cagaagctct ccgggcgtcc cggttgctag cagccaacat cacagctgac ctacggaagg 240  
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| acaagccctt aagggaactca caggacttca cagaagctct ccgggcgtcc cggttgctag  | 1860 |
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<211> 4484

<212> DNA

<213> Rattus sp.

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| aaccagagc tctctggagg cctcacgtca ctatccaatg tatcctgcct gtctaacacc   | 180  |
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| gaatccttcc  | agaggaacac  | aagtgacaag  | ttccagggtt  | cgttctcagc  | tgagcgctct  | 1860 |
| ctggaggatg  | agatcaaccg  | caccaccatc  | caggacctgc  | ctgtctttgc  | cgtcagctac  | 1920 |
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| gaatgtaaat taatataaat gggttgtctt aagttatgat tctagctggg gaggagccta  | 4440 |
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<213> Rattus sp.

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| aayccngary tnwsngngg nytnacnwsn ytnwsnaayg tnwsntgyyt nwsnaayacn  | 180 |
| ccngcnmgnc aygtnacngg ngarcayytn gcnynytnnc armgnathtg yccnmgnytn | 240 |

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| gcNwsnytnG  | cngtnggnws | natgtgyggN | gtntayggNw | sngcnytnTG  | yaaygcncar | 600  |
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| garwsnttyc  | armgnaayac | nwsngayaar | ttycargtnG | Cnttywsngc  | ngarmgnwsn | 1860 |
| ytnGargayG  | arathaaymg | nacnacnath | cargayytnc | CngtnnttyGc | ngtnwsntay | 1920 |
| athathgtnt  | tyytntayat | hwsnytnGcn | ytnggNwsnt | aywsnmGntG  | ywsnmGngtn | 1980 |
| gcngtnGARw  | snaargcnac | nytnggnytn | ggnggngtna | thgtngtnyt  | nggngcngtn | 2040 |



|             |            |             |             |            |             |      |
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| cargayttya  | cngargcnyt | nmgngcnwsn  | mgnytnytn   | cngcnaayat | hacngcngay  | 3240 |
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| mgngcnaarg  | aygcnacngt | nttyatgggn  | wsngcngtnt  | tygcnggngt | ngcnatgacn  | 3660 |
| aayttyccng  | gnathytnat | hytnngntty  | gcncargcnc  | arytnathca | rathttytty  | 3720 |
| ttymgnytna  | ayytnytnat | hacnytnytn  | ggnytnytn   | ayggnytngt | nttyytnccn  | 3780 |
| gtngtnytnw  | sntayytnng | nccngaygtn  | aaycargcny  | tngtncarga | rgaraarytn  | 3840 |

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Ser Ala Gln Gly Glu Leu Tyr Thr Pro Thr His Lys Ala Gly Phe Cys  
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Thr Phe Tyr Glu Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Gly Leu  
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Thr Ser Leu Ser Asn Ile Ser Cys Leu Ser Asn Thr Pro Ala Arg His  
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Val Thr Gly Asp His Leu Ala Leu Leu Gln Arg Val Cys Pro Arg Leu  
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Tyr Asn Gly Pro Asn Asp Thr Tyr Ala Cys Cys Ser Thr Lys Gln Leu  
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Val Ser Leu Asp Ser Ser Leu Ser Ile Thr Lys Ala Leu Leu Thr Arg  
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Cys Pro Ala Cys Ser Glu Asn Phe Val Ser Ile His Cys His Asn Thr  
115 120 125  
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|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| Cys | Ser | Pro | Asp | Gln | Ser | Leu | Phe | Ile | Asn | Val | Thr | Arg | Val | Val | Gln |      |
| 130 |     |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |      |
| cg  | g   | c   | g   | c   | c   | c   | g   | g   | g   | g   | t   | g   | g   | t   | t   | 480  |
| Arg | Asp | Pro | Gly | Gln | Leu | Pro | Ala | Val | Val | Ala | Tyr | Glu | Ala | Phe | Tyr |      |
| 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     | 160 |      |
| caa | cgc | agt | ttt | gca | gag | aag | gcc | tat | gag | tcc | tgt | agc | cgg | gtg | cgc | 528  |
| Gln | Arg | Ser | Phe | Ala | Glu | Lys | Ala | Tyr | Glu | Ser | Cys | Ser | Arg | Val | Arg |      |
|     |     |     |     | 165 |     |     |     |     | 170 |     |     |     |     | 175 |     |      |
| atc | cct | gca | gct | gcc | tcg | ctg | gct | gtg | ggc | agc | atg | tgt | gga | gtg | tat | 576  |
| Ile | Pro | Ala | Ala | Ala | Ser | Leu | Ala | Val | Gly | Ser | Met | Cys | Gly | Val | Tyr |      |
|     |     |     |     | 180 |     |     |     | 185 |     |     |     |     | 190 |     |     |      |
| ggc | tct | gcc | ctc | tgc | aat | gct | cag | cgc | tgg | ctc | aac | ttc | caa | gga | gac | 624  |
| Gly | Ser | Ala | Leu | Cys | Asn | Ala | Gln | Arg | Trp | Leu | Asn | Phe | Gln | Gly | Asp |      |
|     |     | 195 |     |     |     | 200 |     |     |     |     |     | 205 |     |     |     |      |
| aca | ggg | aat | ggc | ctg | gct | ccg | ctg | gac | atc | acc | ttc | cac | ctc | ttg | gag | 672  |
| Thr | Gly | Asn | Gly | Leu | Ala | Pro | Leu | Asp | Ile | Thr | Phe | His | Leu | Leu | Glu |      |
|     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |      |
| cct | ggc | cag | gcc | ctg | gca | gat | ggg | atg | aag | cca | ctg | gat | ggg | aag | atc | 720  |
| Pro | Gly | Gln | Ala | Leu | Ala | Asp | Gly | Met | Lys | Pro | Leu | Asp | Gly | Lys | Ile |      |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |      |
| aca | ccc | tgc | aat | gag | tcc | cag | ggt | gaa | gac | tcg | gca | gcc | tgt | tcc | tgc | 768  |
| Thr | Pro | Cys | Asn | Glu | Ser | Gln | Gly | Glu | Asp | Ser | Ala | Ala | Cys | Ser | Cys |      |
|     |     |     |     | 245 |     |     |     |     | 250 |     |     |     |     | 255 |     |      |
| cag | gac | tgt | gca | gca | tcc | tgc | cct | gtc | atc | cct | ccg | ccc | ccg | gcc | ctg | 816  |
| Gln | Asp | Cys | Ala | Ala | Ser | Cys | Pro | Val | Ile | Pro | Pro | Pro | Pro | Ala | Leu |      |
|     |     |     | 260 |     |     |     |     | 265 |     |     |     |     | 270 |     |     |      |
| cgc | cct | tct | ttc | tac | atg | ggt | cga | atg | cca | ggc | tgg | ctg | gct | ctc | atc | 864  |
| Arg | Pro | Ser | Phe | Tyr | Met | Gly | Arg | Met | Pro | Gly | Trp | Leu | Ala | Leu | Ile |      |
|     |     | 275 |     |     |     |     | 280 |     |     |     |     | 285 |     |     |     |      |
| atc | atc | ttc | act | gct | gtc | ttt | gta | ttg | ctc | tct | gtt | gtc | ctt | gtg | tat | 912  |
| Ile | Ile | Phe | Thr | Ala | Val | Phe | Val | Leu | Leu | Ser | Val | Val | Leu | Val | Tyr |      |
|     |     | 290 |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |      |
| ctc | cga | gtg | gct | tcc | aac | agg | aac | aag | aac | aag | aca | gca | ggc | tcc | cag | 960  |
| Leu | Arg | Val | Ala | Ser | Asn | Arg | Asn | Lys | Asn | Lys | Thr | Ala | Gly | Ser | Gln |      |
| 305 |     |     |     |     | 310 |     |     |     |     | 315 |     |     |     |     | 320 |      |
| gaa | gcc | ccc | aac | ctc | cct | cgt | aag | cgc | aga | ttc | tca | cct | cac | act | gtc | 1008 |
| Glu | Ala | Pro | Asn | Leu | Pro | Arg | Lys | Arg | Arg | Phe | Ser | Pro | His | Thr | Val |      |
|     |     |     |     | 325 |     |     |     |     | 330 |     |     |     |     | 335 |     |      |
| ctt | ggc | cgg | ttc | ttc | gag | agc | tgg | gga | aca | agg | gtg | gcc | tca | tgg | cca | 1056 |
| Leu | Gly | Arg | Phe | Phe | Glu | Ser | Trp | Gly | Thr | Arg | Val | Ala | Ser | Trp | Pro |      |
|     |     |     | 340 |     |     |     |     | 345 |     |     |     | 350 |     |     |     |      |
| ctc | act | gtc | ttg | gca | ctg | tcc | ttc | ata | gtt | gtg | ata | gcc | ttg | tca | gta | 1104 |
| Leu | Thr | Val | Leu | Ala | Leu | Ser | Phe | Ile | Val | Val | Ile | Ala | Leu | Ser | Val |      |
|     |     | 355 |     |     |     |     | 360 |     |     |     |     | 365 |     |     |     |      |
| ggc | ctg | acc | ttt | ata | gaa | ctc | acc | aca | gac | cct | gtg | gaa | ctg | tgg | tcg | 1152 |
| Gly | Leu | Thr | Phe | Ile | Glu | Leu | Thr | Thr | Asp | Pro | Val | Glu | Leu | Trp | Ser |      |

| 370   | 375 | 380 |      |
|---|-----|-----|------|
| gcc cct aaa agc caa gcc cgg aaa gaa aag gct ttc cat gac gag cat<br>Ala Pro Lys Ser Gln Ala Arg Lys Glu Lys Ala Phe His Asp Glu His<br>385 390 395 400 |     |     | 1200 |
| ttt ggc ccc ttc ttc cga acc aac cag att ttt gtg aca gct aag aac<br>Phe Gly Pro Phe Phe Arg Thr Asn Gln Ile Phe Val Thr Ala Lys Asn<br>405 410 415     |     |     | 1248 |
| agg tcc agc tac aag tac gac tcc ctg ctg cta ggg ccc aag aac ttc<br>Arg Ser Ser Tyr Lys Tyr Asp Ser Leu Leu Gly Pro Lys Asn Phe<br>420 425 430         |     |     | 1296 |
| agt ggg atc cta tcc ctg gac ttg ctg cag gag ctg ttg gag cta cag<br>Ser Gly Ile Leu Ser Leu Asp Leu Leu Gln Glu Leu Leu Glu Leu Gln<br>435 440 445     |     |     | 1344 |
| gag aga ctt cga cac ctg caa gtg tgg tcc cat gag gca cag cgc aac<br>Glu Arg Leu Arg His Leu Gln Val Trp Ser His Glu Ala Gln Arg Asn<br>450 455 460     |     |     | 1392 |
| atc tcc ctc cag gac atc tgc tat gct ccc ctc aac ccg cat aac acc<br>Ile Ser Leu Gln Asp Ile Cys Tyr Ala Pro Leu Asn Pro His Asn Thr<br>465 470 475 480 |     |     | 1440 |
| agc ctc act gac tgc tgt gtc aac agc ctc ctt caa tac ttc cag aac<br>Ser Leu Thr Asp Cys Cys Val Asn Ser Leu Leu Gln Tyr Phe Gln Asn<br>485 490 495     |     |     | 1488 |
| aac cac aca ctc ctg ctg ctc aca gcc aat cag act ctg aat ggc cag<br>Asn His Thr Leu Leu Leu Leu Thr Ala Asn Gln Thr Leu Asn Gly Gln<br>500 505 510     |     |     | 1536 |
| acc tcc ctg gtg gac tgg aag gac cat ttc ctc tac tgt gcc aat gcc<br>Thr Ser Leu Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala<br>515 520 525     |     |     | 1584 |
| cct ctc acg tac aaa gat ggc aca gcc ctg gcc ctg agc tgc ata gct<br>Pro Leu Thr Tyr Lys Asp Gly Thr Ala Leu Ala Leu Ser Cys Ile Ala<br>530 535 540     |     |     | 1632 |
| gac tac ggg gca cct gtc ttc ccc ttc ctt gct gtt ggg ggc tac caa<br>Asp Tyr Gly Ala Pro Val Phe Pro Phe Leu Ala Val Gly Gly Tyr Gln<br>545 550 555 560 |     |     | 1680 |
| ggg acg gac tac tcg gag gca gaa gcc ctg atc ata acc ttc tct atc<br>Gly Thr Asp Tyr Ser Glu Ala Glu Ala Leu Ile Ile Thr Phe Ser Ile<br>565 570 575     |     |     | 1728 |
| aat aac tac ccc gct gat gat ccc cgc atg gcc cac gcc aag ctc tgg<br>Asn Asn Tyr Pro Ala Asp Asp Pro Arg Met Ala His Ala Lys Leu Trp<br>580 585 590     |     |     | 1776 |
| gag gag gct ttc ttg aag gaa atg caa tcc ttc cag aga agc aca gct<br>Glu Glu Ala Phe Leu Lys Glu Met Gln Ser Phe Gln Arg Ser Thr Ala<br>595 600 605     |     |     | 1824 |
| gac aag ttc cag att gcg ttc tca gct gag cgt tct ctg gag gac gag<br>Asp Lys Phe Gln Ile Ala Phe Ser Ala Glu Arg Ser Leu Glu Asp Glu<br>610 615 620     |     |     | 1872 |

|   |      |
|---|------|
| atc aat cgc act acc atc cag gac ctg cct gtc ttt gcc atc agc tac<br>Ile Asn Arg Thr Thr Ile Gln Asp Leu Pro Val Phe Ala Ile Ser Tyr<br>625 630 635 640 | 1920 |
| ctt atc gtc ttc ctg tac atc tcc ctg gcc ctg ggc agc tac tcc aga<br>Leu Ile Val Phe Leu Tyr Ile Ser Leu Ala Leu Gly Ser Tyr Ser Arg<br>645 650 655     | 1968 |
| tgg agc cga gtt gcg gtg gat tcc aag gct act ctg ggc cta ggt ggg<br>Trp Ser Arg Val Ala Val Asp Ser Lys Ala Thr Leu Gly Leu Gly Gly<br>660 665 670     | 2016 |
| gtg gct gtt gtg ctg gga gca gtc gtc gct gcc atg ggc ttc tac tcc<br>Val Ala Val Val Leu Gly Ala Val Val Ala Ala Met Gly Phe Tyr Ser<br>675 680 685     | 2064 |
| tac ctg ggt gtc ccc tcc tct ctg gtc atc att caa gtg gta cct ttc<br>Tyr Leu Gly Val Pro Ser Ser Leu Val Ile Ile Gln Val Val Pro Phe<br>690 695 700     | 2112 |
| ctg gtg ctg gct gtg gga gct gac aac atc ttc atc ttt gtt ctt gag<br>Leu Val Leu Ala Val Gly Ala Asp Asn Ile Phe Ile Phe Val Leu Glu<br>705 710 715 720 | 2160 |
| tac cag agg ctg cct agg atg ccc ggg gag cag cga gag gct cac att<br>Tyr Gln Arg Leu Pro Arg Met Pro Gly Glu Gln Arg Glu Ala His Ile<br>725 730 735     | 2208 |
| ggc cgc acc ctg ggt agt gtg gcc ccc agc atg ctg ctg tgc agc ctc<br>Gly Arg Thr Leu Gly Ser Val Ala Pro Ser Met Leu Leu Cys Ser Leu<br>740 745 750     | 2256 |
| tct gag gcc atc tgc ttc ttt cta ggg gcc ctg acc tcc atg cca gct<br>Ser Glu Ala Ile Cys Phe Phe Leu Gly Ala Leu Thr Ser Met Pro Ala<br>755 760 765     | 2304 |
| gtg agg acc ttt gcc ttg acc tct ggc tta gca atc atc ttt gac ttc<br>Val Arg Thr Phe Ala Leu Thr Ser Gly Leu Ala Ile Ile Phe Asp Phe<br>770 775 780     | 2352 |
| ctg ctc cag atg aca gcc ttt gtg gcc ctg ctc tcc ctg gat agc aag<br>Leu Leu Gln Met Thr Ala Phe Val Ala Leu Leu Ser Leu Asp Ser Lys<br>785 790 795 800 | 2400 |
| agg cag gag gcc tct cgc ccc gac gtc gtg tgc tgc ttt tca agc cga<br>Arg Gln Glu Ala Ser Arg Pro Asp Val Val Cys Cys Phe Ser Ser Arg<br>805 810 815     | 2448 |
| aat ctg ccc cca ccg aaa caa aaa gaa ggc ctc tta ctt tgc ttc ttc<br>Asn Leu Pro Pro Pro Lys Gln Lys Glu Gly Leu Leu Leu Cys Phe Phe<br>820 825 830     | 2496 |
| cgc aag ata tac act ccc ttc ctg ctg cac aga ttc atc cgc cct gtt<br>Arg Lys Ile Tyr Thr Pro Phe Leu Leu His Arg Phe Ile Arg Pro Val<br>835 840 845     | 2544 |
| gtg ctg ctg ctc ttt ctg gtc ctg ttt gga gca aac ctc tac tta atg<br>Val Leu Leu Leu Phe Leu Val Leu Phe Gly Ala Asn Leu Tyr Leu Met<br>850 855 860     | 2592 |

|   |      |
|---|------|
| tgc aac atc agc gtg ggg ctg gac cag gat ctg gct ctg ccc aag gat<br>Cys Asn Ile Ser Val Gly Leu Asp Gln Asp Leu Ala Leu Pro Lys Asp<br>865 870 875 880 | 2640 |
| tcc tac ctg ata gac tac ttc ctc ttt ctg aac cgg tac ttg gaa gtg<br>Ser Tyr Leu Ile Asp Tyr Phe Leu Phe Leu Asn Arg Tyr Leu Glu Val<br>885 890 895     | 2688 |
| ggg cct cca gtg tac ttt gac acc acc tca ggc tac aac ttt tcc acc<br>Gly Pro Pro Val Tyr Phe Asp Thr Thr Ser Gly Tyr Asn Phe Ser Thr<br>900 905 910     | 2736 |
| gag gca ggc atg aac gcc att tgc tct agt gca ggc tgt gag agc ttc<br>Glu Ala Gly Met Asn Ala Ile Cys Ser Ser Ala Gly Cys Glu Ser Phe<br>915 920 925     | 2784 |
| tcc cta acc cag aaa atc cag tat gcc agt gaa ttc cct aat cag tct<br>Ser Leu Thr Gln Lys Ile Gln Tyr Ala Ser Glu Phe Pro Asn Gln Ser<br>930 935 940     | 2832 |
| tat gtg gct att gct gca tcc tcc tgg gta gat gac ttc atc gac tgg<br>Tyr Val Ala Ile Ala Ala Ser Ser Trp Val Asp Asp Phe Ile Asp Trp<br>945 950 955 960 | 2880 |
| ctg acc cca tcc tcc tcc tgc tgc cgc att tat acc cgt ggc ccc cat<br>Leu Thr Pro Ser Ser Ser Cys Cys Arg Ile Tyr Thr Arg Gly Pro His<br>965 970 975     | 2928 |
| aaa gat gag ttc tgt ccc tca acg gat act tcc ttc aac tgt ctc aaa<br>Lys Asp Glu Phe Cys Pro Ser Thr Asp Thr Ser Phe Asn Cys Leu Lys<br>980 985 990     | 2976 |
| aac tgc atg aac cgc act ctg ggt ccc gtg aga ccc aca aca gaa cag<br>Asn Cys Met Asn Arg Thr Leu Gly Pro Val Arg Pro Thr Thr Glu Gln<br>995 1000 1005   | 3024 |
| ttt cat aag tac ctg ccc tgg ttc ctg aat gat acg ccc aac atc<br>Phe His Lys Tyr Leu Pro Trp Phe Leu Asn Asp Thr Pro Asn Ile<br>1010 1015 1020          | 3069 |
| aga tgt cct aaa ggg ggc cta gca gcg tat aga acc tct gtg aat<br>Arg Cys Pro Lys Gly Gly Leu Ala Ala Tyr Arg Thr Ser Val Asn<br>1025 1030 1035          | 3114 |
| ttg agc tca gat ggc cag att ata gcc tcc cag ttc atg gcc tac<br>Leu Ser Ser Asp Gly Gln Ile Ile Ala Ser Gln Phe Met Ala Tyr<br>1040 1045 1050          | 3159 |
| cac aag ccc tta cgg aac tca cag gac ttt aca gaa gct ctc cgg<br>His Lys Pro Leu Arg Asn Ser Gln Asp Phe Thr Glu Ala Leu Arg<br>1055 1060 1065          | 3204 |
| gca tcc cgg ttg cta gca gcc aac atc aca gct gaa cta cgg aag<br>Ala Ser Arg Leu Leu Ala Ala Asn Ile Thr Ala Glu Leu Arg Lys<br>1070 1075 1080          | 3249 |
| gtg cct ggg aca gat ccc aac ttt gag gtc ttc cct tac acg atc<br>Val Pro Gly Thr Asp Pro Asn Phe Glu Val Phe Pro Tyr Thr Ile<br>1085 1090 1095          | 3294 |
| tcc aat gtg ttc tac cag caa tac ctg acg gtt ctc cct gag gga   | 3339 |

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|------|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|------|
| Ser  | Asn | Val | Phe | Tyr | Gln | Gln  | Tyr | Leu | Thr | Val | Leu  | Pro | Glu | Gly |      |
| 1100 |     |     |     |     |     | 1105 |     |     |     |     | 1110 |     |     |     |      |
| atc  | ttc | act | ctt | gct | ctc | tgc  | ttc | gtg | ccc | acc | ttt  | gtg | gtc | tgc | 3384 |
| Ile  | Phe | Thr | Leu | Ala | Leu | Cys  | Phe | Val | Pro | Thr | Phe  | Val | Val | Cys |      |
| 1115 |     |     |     |     |     | 1120 |     |     |     |     | 1125 |     |     |     |      |
| tac  | ctc | cta | ctg | ggc | ctg | gac  | ata | cgc | tca | ggc | atc  | ctc | aac | ctg | 3429 |
| Tyr  | Leu | Leu | Leu | Gly | Leu | Asp  | Ile | Arg | Ser | Gly | Ile  | Leu | Asn | Leu |      |
| 1130 |     |     |     |     |     | 1135 |     |     |     |     | 1140 |     |     |     |      |
| ctc  | tcc | atc | att | atg | atc | ctc  | gtg | gac | acc | atc | ggc  | ctc | atg | gct | 3474 |
| Leu  | Ser | Ile | Ile | Met | Ile | Leu  | Val | Asp | Thr | Ile | Gly  | Leu | Met | Ala |      |
| 1145 |     |     |     |     |     | 1150 |     |     |     |     | 1155 |     |     |     |      |
| gtg  | tgg | ggt | atc | agc | tac | aat  | gct | gtg | tcc | ctc | atc  | aac | ctt | gtc | 3519 |
| Val  | Trp | Gly | Ile | Ser | Tyr | Asn  | Ala | Val | Ser | Leu | Ile  | Asn | Leu | Val |      |
| 1160 |     |     |     |     |     | 1165 |     |     |     |     | 1170 |     |     |     |      |
| acg  | gca | gtg | ggc | atg | tct | gtg  | gag | ttc | gtg | tcc | cac  | att | acc | cgg | 3564 |
| Thr  | Ala | Val | Gly | Met | Ser | Val  | Glu | Phe | Val | Ser | His  | Ile | Thr | Arg |      |
| 1175 |     |     |     |     |     | 1180 |     |     |     |     | 1185 |     |     |     |      |
| tcc  | ttt | gct | gta | agc | acc | aag  | cct | acc | cgg | ctg | gag  | aga | gcc | aaa | 3609 |
| Ser  | Phe | Ala | Val | Ser | Thr | Lys  | Pro | Thr | Arg | Leu | Glu  | Arg | Ala | Lys |      |
| 1190 |     |     |     |     |     | 1195 |     |     |     |     | 1200 |     |     |     |      |
| gat  | gct | act | atc | ttc | atg | ggc  | agt | gcg | gtg | ttt | gct  | gga | gtg | gcc | 3654 |
| Asp  | Ala | Thr | Ile | Phe | Met | Gly  | Ser | Ala | Val | Phe | Ala  | Gly | Val | Ala |      |
| 1205 |     |     |     |     |     | 1210 |     |     |     |     | 1215 |     |     |     |      |
| atg  | acc | aac | ttc | ccg | ggc | atc  | ctc | atc | ctg | ggc | ttt  | gct | cag | gcc | 3699 |
| Met  | Thr | Asn | Phe | Pro | Gly | Ile  | Leu | Ile | Leu | Gly | Phe  | Ala | Gln | Ala |      |
| 1220 |     |     |     |     |     | 1225 |     |     |     |     | 1230 |     |     |     |      |
| cag  | ctt | atc | cag | att | ttc | ttc  | ttc | cgc | ctc | aac | ctc  | ctg | atc | acc | 3744 |
| Gln  | Leu | Ile | Gln | Ile | Phe | Phe  | Phe | Arg | Leu | Asn | Leu  | Leu | Ile | Thr |      |
| 1235 |     |     |     |     |     | 1240 |     |     |     |     | 1245 |     |     |     |      |
| ttg  | ctg | ggt | ctg | cta | cac | ggc  | ctg | gtc | ttc | ctg | ccc  | gtt | gtc | ctc | 3789 |
| Leu  | Leu | Gly | Leu | Leu | His | Gly  | Leu | Val | Phe | Leu | Pro  | Val | Val | Leu |      |
| 1250 |     |     |     |     |     | 1255 |     |     |     |     | 1260 |     |     |     |      |
| agc  | tat | ctg | ggg | cca | gat | gtt  | aac | caa | gct | ctg | gta  | ctg | gag | gag | 3834 |
| Ser  | Tyr | Leu | Gly | Pro | Asp | Val  | Asn | Gln | Ala | Leu | Val  | Leu | Glu | Glu |      |
| 1265 |     |     |     |     |     | 1270 |     |     |     |     | 1275 |     |     |     |      |
| aaa  | cta | gcc | act | gag | gca | gcc  | atg | gtc | tca | gag | cct  | tct | tgc | cca | 3879 |
| Lys  | Leu | Ala | Thr | Glu | Ala | Ala  | Met | Val | Ser | Glu | Pro  | Ser | Cys | Pro |      |
| 1280 |     |     |     |     |     | 1285 |     |     |     |     | 1290 |     |     |     |      |
| cag  | tac | ccc | ttc | ccg | gct | gat  | gca | aac | acc | agt | gac  | tat | gtt | aac | 3924 |
| Gln  | Tyr | Pro | Phe | Pro | Ala | Asp  | Ala | Asn | Thr | Ser | Asp  | Tyr | Val | Asn |      |
| 1295 |     |     |     |     |     | 1300 |     |     |     |     | 1305 |     |     |     |      |
| tac  | ggc | ttt | aat | cca | gaa | ttt  | atc | cct | gaa | att | aat  | gct | gct | agc | 3969 |
| Tyr  | Gly | Phe | Asn | Pro | Glu | Phe  | Ile | Pro | Glu | Ile | Asn  | Ala | Ala | Ser |      |
| 1310 |     |     |     |     |     | 1315 |     |     |     |     | 1320 |     |     |     |      |
| agc  | tct | ctg | ccc | aaa | agt | gac  | caa | aag | ttc | taa |      |     |     |     | 4002 |
| Ser  | Ser | Leu | Pro | Lys | Ser | Asp  | Gln | Lys | Phe |     |      |     |     |     |      |

1325

1330

&lt;210&gt; 12

&lt;211&gt; 1333

&lt;212&gt; PRT

&lt;213&gt; Mus sp.

&lt;400&gt; 12

Met Ala Ala Ala Trp Gln Gly Trp Leu Leu Trp Ala Leu Leu Leu Asn  
 1 5 10 15

Ser Ala Gln Gly Glu Leu Tyr Thr Pro Thr His Lys Ala Gly Phe Cys  
 20 25 30

Thr Phe Tyr Glu Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Gly Leu  
 35 40 45

Thr Ser Leu Ser Asn Ile Ser Cys Leu Ser Asn Thr Pro Ala Arg His  
 50 55 60

Val Thr Gly Asp His Leu Ala Leu Leu Gln Arg Val Cys Pro Arg Leu  
 65 70 75 80

Tyr Asn Gly Pro Asn Asp Thr Tyr Ala Cys Cys Ser Thr Lys Gln Leu  
 85 90 95

Val Ser Leu Asp Ser Ser Leu Ser Ile Thr Lys Ala Leu Leu Thr Arg  
 100 105 110

Cys Pro Ala Cys Ser Glu Asn Phe Val Ser Ile His Cys His Asn Thr  
 115 120 125

Cys Ser Pro Asp Gln Ser Leu Phe Ile Asn Val Thr Arg Val Val Gln  
 130 135 140

Arg Asp Pro Gly Gln Leu Pro Ala Val Val Ala Tyr Glu Ala Phe Tyr  
 145 150 155 160

Gln Arg Ser Phe Ala Glu Lys Ala Tyr Glu Ser Cys Ser Arg Val Arg  
 165 170 175

Ile Pro Ala Ala Ala Ser Leu Ala Val Gly Ser Met Cys Gly Val Tyr  
 180 185 190



Gly Ser Ala Leu Cys Asn Ala Gln Arg Trp Leu Asn Phe Gln Gly Asp  
 195 200 205

Thr Gly Asn Gly Leu Ala Pro Leu Asp Ile Thr Phe His Leu Leu Glu  
 210 215 220

Pro Gly Gln Ala Leu Ala Asp Gly Met Lys Pro Leu Asp Gly Lys Ile  
 225 230 235 240

Thr Pro Cys Asn Glu Ser Gln Gly Glu Asp Ser Ala Ala Cys Ser Cys  
 245 250 255

Gln Asp Cys Ala Ala Ser Cys Pro Val Ile Pro Pro Pro Pro Ala Leu  
 260 265 270

Arg Pro Ser Phe Tyr Met Gly Arg Met Pro Gly Trp Leu Ala Leu Ile  
 275 280 285

Ile Ile Phe Thr Ala Val Phe Val Leu Leu Ser Val Val Leu Val Tyr  
 290 295 300

Leu Arg Val Ala Ser Asn Arg Asn Lys Asn Lys Thr Ala Gly Ser Gln  
 305 310 315 320

Glu Ala Pro Asn Leu Pro Arg Lys Arg Arg Phe Ser Pro His Thr Val  
 325 330 335

Leu Gly Arg Phe Phe Glu Ser Trp Gly Thr Arg Val Ala Ser Trp Pro  
 340 345 350

Leu Thr Val Leu Ala Leu Ser Phe Ile Val Val Ile Ala Leu Ser Val  
 355 360 365

Gly Leu Thr Phe Ile Glu Leu Thr Thr Asp Pro Val Glu Leu Trp Ser  
 370 375 380

Ala Pro Lys Ser Gln Ala Arg Lys Glu Lys Ala Phe His Asp Glu His  
 385 390 395 400

Phe Gly Pro Phe Phe Arg Thr Asn Gln Ile Phe Val Thr Ala Lys Asn  
 405 410 415

Arg Ser Ser Tyr Lys Tyr Asp Ser Leu Leu Leu Gly Pro Lys Asn Phe  
 420 425 430

Ser Gly Ile Leu Ser Leu Asp Leu Leu Gln Glu Leu Leu Glu Leu Gln  
 435 440 445

Glu Arg Leu Arg His Leu Gln Val Trp Ser His Glu Ala Gln Arg Asn  
 450 455 460

Ile Ser Leu Gln Asp Ile Cys Tyr Ala Pro Leu Asn Pro His Asn Thr  
 465 470 475 480

Ser Leu Thr Asp Cys Cys Val Asn Ser Leu Leu Gln Tyr Phe Gln Asn  
 485 490 495

Asn His Thr Leu Leu Leu Leu Thr Ala Asn Gln Thr Leu Asn Gly Gln  
 500 505 510

Thr Ser Leu Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala  
 515 520 525

Pro Leu Thr Tyr Lys Asp Gly Thr Ala Leu Ala Leu Ser Cys Ile Ala  
 530 535 540

Asp Tyr Gly Ala Pro Val Phe Pro Phe Leu Ala Val Gly Gly Tyr Gln  
 545 550 555 560

Gly Thr Asp Tyr Ser Glu Ala Glu Ala Leu Ile Ile Thr Phe Ser Ile  
 565 570 575

Asn Asn Tyr Pro Ala Asp Asp Pro Arg Met Ala His Ala Lys Leu Trp  
 580 585 590

Glu Glu Ala Phe Leu Lys Glu Met Gln Ser Phe Gln Arg Ser Thr Ala  
 595 600 605

Asp Lys Phe Gln Ile Ala Phe Ser Ala Glu Arg Ser Leu Glu Asp Glu  
 610 615 620

Ile Asn Arg Thr Thr Ile Gln Asp Leu Pro Val Phe Ala Ile Ser Tyr  
 625 630 635 640

Leu Ile Val Phe Leu Tyr Ile Ser Leu Ala Leu Gly Ser Tyr Ser Arg  
 645 650 655

Trp Ser Arg Val Ala Val Asp Ser Lys Ala Thr Leu Gly Leu Gly Gly  
 660 665 670

Val Ala Val Val Leu Gly Ala Val Val Ala Ala Met Gly Phe Tyr Ser  
 675 680 685

Tyr Leu Gly Val Pro Ser Ser Leu Val Ile Ile Gln Val Val Pro Phe  
 690 695 700

Leu Val Leu Ala Val Gly Ala Asp Asn Ile Phe Ile Phe Val Leu Glu  
 705 710 715 720

Tyr Gln Arg Leu Pro Arg Met Pro Gly Glu Gln Arg Glu Ala His Ile  
 725 730 735

Gly Arg Thr Leu Gly Ser Val Ala Pro Ser Met Leu Leu Cys Ser Leu  
 740 745 750

Ser Glu Ala Ile Cys Phe Phe Leu Gly Ala Leu Thr Ser Met Pro Ala  
 755 760 765

Val Arg Thr Phe Ala Leu Thr Ser Gly Leu Ala Ile Ile Phe Asp Phe  
 770 775 780

Leu Leu Gln Met Thr Ala Phe Val Ala Leu Leu Ser Leu Asp Ser Lys  
 785 790 795 800

Arg Gln Glu Ala Ser Arg Pro Asp Val Val Cys Cys Phe Ser Ser Arg  
 805 810 815

Asn Leu Pro Pro Pro Lys Gln Lys Glu Gly Leu Leu Leu Cys Phe Phe  
 820 825 830

Arg Lys Ile Tyr Thr Pro Phe Leu Leu His Arg Phe Ile Arg Pro Val  
 835 840 845

Val Leu Leu Leu Phe Leu Val Leu Phe Gly Ala Asn Leu Tyr Leu Met  
 850 855 860

Cys Asn Ile Ser Val Gly Leu Asp Gln Asp Leu Ala Leu Pro Lys Asp  
 865 870 875 880

Ser Tyr Leu Ile Asp Tyr Phe Leu Phe Leu Asn Arg Tyr Leu Glu Val  
 885 890 895

Gly Pro Pro Val Tyr Phe Asp Thr Thr Ser Gly Tyr Asn Phe Ser Thr  
 900 905 910

Glu Ala Gly Met Asn Ala Ile Cys Ser Ser Ala Gly Cys Glu Ser Phe

|  |     |     |
|--|-----|-----|
| 915  | 920 | 925 |
| Ser Leu Thr Gln Lys Ile Gln Tyr Ala Ser Glu Phe Pro Asn Gln Ser<br>930 935 940     |     |     |
| Tyr Val Ala Ile Ala Ala Ser Ser Trp Val Asp Asp Phe Ile Asp Trp<br>945 950 955 960 |     |     |
| Leu Thr Pro Ser Ser Ser Cys Cys Arg Ile Tyr Thr Arg Gly Pro His<br>965 970 975     |     |     |
| Lys Asp Glu Phe Cys Pro Ser Thr Asp Thr Ser Phe Asn Cys Leu Lys<br>980 985 990     |     |     |
| Asn Cys Met Asn Arg Thr Leu Gly Pro Val Arg Pro Thr Thr Glu Gln<br>995 1000 1005   |     |     |
| Phe His Lys Tyr Leu Pro Trp Phe Leu Asn Asp Thr Pro Asn Ile<br>1010 1015 1020      |     |     |
| Arg Cys Pro Lys Gly Gly Leu Ala Ala Tyr Arg Thr Ser Val Asn<br>1025 1030 1035      |     |     |
| Leu Ser Ser Asp Gly Gln Ile Ile Ala Ser Gln Phe Met Ala Tyr<br>1040 1045 1050      |     |     |
| His Lys Pro Leu Arg Asn Ser Gln Asp Phe Thr Glu Ala Leu Arg<br>1055 1060 1065      |     |     |
| Ala Ser Arg Leu Leu Ala Ala Asn Ile Thr Ala Glu Leu Arg Lys<br>1070 1075 1080      |     |     |
| Val Pro Gly Thr Asp Pro Asn Phe Glu Val Phe Pro Tyr Thr Ile<br>1085 1090 1095      |     |     |
| Ser Asn Val Phe Tyr Gln Gln Tyr Leu Thr Val Leu Pro Glu Gly<br>1100 1105 1110      |     |     |
| Ile Phe Thr Leu Ala Leu Cys Phe Val Pro Thr Phe Val Val Cys<br>1115 1120 1125      |     |     |
| Tyr Leu Leu Leu Gly Leu Asp Ile Arg Ser Gly Ile Leu Asn Leu<br>1130 1135 1140      |     |     |
| Leu Ser Ile Ile Met Ile Leu Val Asp Thr Ile Gly Leu Met Ala<br>1145 1150 1155      |     |     |

|      |     |     |     |     |     |      |     |     |     |     |      |     |     |     |
|------|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|
| Val  | Trp | Gly | Ile | Ser | Tyr | Asn  | Ala | Val | Ser | Leu | Ile  | Asn | Leu | Val |
| 1160 |     |     |     |     |     | 1165 |     |     |     |     | 1170 |     |     |     |
|      |     |     |     |     |     |      |     |     |     |     |      |     |     |     |
| Thr  | Ala | Val | Gly | Met | Ser | Val  | Glu | Phe | Val | Ser | His  | Ile | Thr | Arg |
| 1175 |     |     |     |     |     | 1180 |     |     |     |     | 1185 |     |     |     |
|      |     |     |     |     |     |      |     |     |     |     |      |     |     |     |
| Ser  | Phe | Ala | Val | Ser | Thr | Lys  | Pro | Thr | Arg | Leu | Glu  | Arg | Ala | Lys |
| 1190 |     |     |     |     |     | 1195 |     |     |     |     | 1200 |     |     |     |
|      |     |     |     |     |     |      |     |     |     |     |      |     |     |     |
| Asp  | Ala | Thr | Ile | Phe | Met | Gly  | Ser | Ala | Val | Phe | Ala  | Gly | Val | Ala |
| 1205 |     |     |     |     |     | 1210 |     |     |     |     | 1215 |     |     |     |
|      |     |     |     |     |     |      |     |     |     |     |      |     |     |     |
| Met  | Thr | Asn | Phe | Pro | Gly | Ile  | Leu | Ile | Leu | Gly | Phe  | Ala | Gln | Ala |
| 1220 |     |     |     |     |     | 1225 |     |     |     |     | 1230 |     |     |     |
|      |     |     |     |     |     |      |     |     |     |     |      |     |     |     |
| Gln  | Leu | Ile | Gln | Ile | Phe | Phe  | Phe | Arg | Leu | Asn | Leu  | Leu | Ile | Thr |
| 1235 |     |     |     |     |     | 1240 |     |     |     |     | 1245 |     |     |     |
|      |     |     |     |     |     |      |     |     |     |     |      |     |     |     |
| Leu  | Leu | Gly | Leu | Leu | His | Gly  | Leu | Val | Phe | Leu | Pro  | Val | Val | Leu |
| 1250 |     |     |     |     |     | 1255 |     |     |     |     | 1260 |     |     |     |
|      |     |     |     |     |     |      |     |     |     |     |      |     |     |     |
| Ser  | Tyr | Leu | Gly | Pro | Asp | Val  | Asn | Gln | Ala | Leu | Val  | Leu | Glu | Glu |
| 1265 |     |     |     |     |     | 1270 |     |     |     |     | 1275 |     |     |     |
|      |     |     |     |     |     |      |     |     |     |     |      |     |     |     |
| Lys  | Leu | Ala | Thr | Glu | Ala | Ala  | Met | Val | Ser | Glu | Pro  | Ser | Cys | Pro |
| 1280 |     |     |     |     |     | 1285 |     |     |     |     | 1290 |     |     |     |
|      |     |     |     |     |     |      |     |     |     |     |      |     |     |     |
| Gln  | Tyr | Pro | Phe | Pro | Ala | Asp  | Ala | Asn | Thr | Ser | Asp  | Tyr | Val | Asn |
| 1295 |     |     |     |     |     | 1300 |     |     |     |     | 1305 |     |     |     |
|      |     |     |     |     |     |      |     |     |     |     |      |     |     |     |
| Tyr  | Gly | Phe | Asn | Pro | Glu | Phe  | Ile | Pro | Glu | Ile | Asn  | Ala | Ala | Ser |
| 1310 |     |     |     |     |     | 1315 |     |     |     |     | 1320 |     |     |     |
|      |     |     |     |     |     |      |     |     |     |     |      |     |     |     |
| Ser  | Ser | Leu | Pro | Lys | Ser | Asp  | Gln | Lys | Phe |     |      |     |     |     |
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<211> 3999

<212> DNA

<213> Mus sp.

<220>

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<222> (1)..(3999)

<223> n is g or a or t or c

<400> 13

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| garytntaya cncnacnca yaargcnggn ttytgyacnt tytaygarga rtgyggnaar    | 120  |
| aayccngary tnwsngngg nytnacnwsn ytnwsnaaya thwsntgyyt nwsnaayacn    | 180  |
| ccngcnmgnc aygtnacngg ngaycayytn gcnytnytn armngntntg yccnmgnytn    | 240  |
| tayaayggnc cnaaygayac ntaygcntgy tgywsnacna arcarytngt nwsnytngay   | 300  |
| wsnwsnytnw snathacnaa rgcnynytn acnmngntgyc cngcntgyws ngaraaytty   | 360  |
| gtwnsnathc aytgycaaya yacntgywsn ccngaycarw snytnnttyat haaygtnacn  | 420  |
| mgngtngtnc armnggaycc nggncarytn ccngcngtng tngcntayga rgcnttytay   | 480  |
| carmgnwsnt tygcngaraa rgcntaygar wsntgywsnm gngtnmgntat hccngcngcn  | 540  |
| gcnwsnytn gngtnggnws natgtgyggg gtntayggngw sngcnytnntg yaaygcncar  | 600  |
| mgntggytna ayttycargg ngayacnggn aayggnytn cncnytn ga yathacntty    | 660  |
| cayytnytn arcnggnca rgcnynngcn gayggntatga arcnytn ga yggnaarath    | 720  |
| acncntgya aygarwsnca rggngargay wsngcngcnt gywsntgyca rgaytgygc     | 780  |
| gcnwsntgyc cngtnathcc nccncncn gcnytnmgnc cnwsnttyta yatggngmgn     | 840  |
| atgcngngnt ggytnngcny nathathath ttyacngcng tnttygtnytn nytnwsngtn  | 900  |
| gtnytngtnt ayytnmgnt ngcnwsnaay mgnaayaara ayaaracngc nggnwsncar    | 960  |
| gargncnca ayytnccnmg naarmngmgn ttywsncnc ayacngtnytn nggnmgntty    | 1020 |
| ttygarwsnt ggggnacnmg ngtnngcnwsn tggcnytna cngtnytngc nytnwsntty   | 1080 |
| athgtngtna thgcnynws ngtnngnytn acnttyathg arytnacnac ngayccngtn    | 1140 |
| garytnntggw sngcncnca rwsncargcn mgnaargara argcnttyca ygaygaray    | 1200 |
| tyggncnt tyttymgnac naaycarath ttygtnacng cnaaraaymg nwsnwsntay     | 1260 |
| aartaygayw snytnytnytn nggncncaar aayttywsng gnathytnws nytngayytn  | 1320 |
| ytnccargary tnytngaryt ncargarmgn ytnmgncayy tncargtntg gwsncaygar  | 1380 |
| gncarmgna ayathwsnytn ncargayath tgytaygcnc cnytnaaycc ncayaayacn   | 1440 |
| wsnytnacng aytgytgyt naaywsnytn ytnccartayt tycaraayaa ycayacnytn   | 1500 |
| ytnytnytna cngcnaayca racnytnaay ggncaracnw snytnngtn ga ytggaargay | 1560 |
| caytttytn aytgygnaa ygcncnytn acntayaarg ayggnacngc nytnngcnytn     | 1620 |
| wsntgyathg cngaytaygg ngcncngtn ttyccntty tngcngtng nggntaycar      | 1680 |
| ggnacngayt aywsngargc ngargcnytn athathacnt tywsnathaa yaaytayccn   | 1740 |

|             |             |             |             |             |             |      |
|-------------|-------------|-------------|-------------|-------------|-------------|------|
| gcngaygayc  | cnmgngatggc | ncaygcnaar  | ytntgggarg  | argcnttyyt  | naargaratg  | 1800 |
| carwsnttyc  | armgnwsnac  | ngcngayaar  | ttycarathg  | cnttywsngc  | ngarmgnwsn  | 1860 |
| ytngargayg  | arathaaymg  | nacnacnath  | cargayytnc  | cngtnttygc  | nathwsntay  | 1920 |
| ytnathgtnt  | tyytntayat  | hwsnytnngcn | ytnggnwsnt  | aywsnmngtg  | gwsnmngngtn | 1980 |
| gcngtngayw  | snaargcnac  | nytnngnytn  | ggngngngtng | cngtngtnyt  | nggngcngtn  | 2040 |
| gtngcngcna  | tgggnttyta  | ywsntayytn  | ggngtnccnw  | snwsnytngt  | nathathcar  | 2100 |
| gtngtnccnt  | tyytngtnyt  | ngcngtnggn  | gcngayaaya  | thttyathtt  | ygtnytngar  | 2160 |
| taycarmgny  | tnccnmgnat  | gccngnggar  | carmngngarg | cncayathgg  | nmgnacnytn  | 2220 |
| ggngwsngtng | cncnwsnat   | gytnytnngy  | wsnytnwsng  | argcnathtg  | ytttytyytn  | 2280 |
| ggngcnytna  | cnwsnatgcc  | ngcngtnmgn  | acnttygcny  | tnacnwsngg  | nytnngcnath | 2340 |
| athttygayt  | tyytnytnca  | ratgacngcn  | ttygtngcny  | tnytnwsnyt  | ngaywsnaar  | 2400 |
| mgncargarg  | cnwsnmgncc  | ngaygtngtn  | tgytgyttyw  | snwsnmgnaa  | yytnccnccn  | 2460 |
| ccnaarcara  | argarggnyt  | nytnytnngy  | ttytymgna   | arathtayac  | nccnttyytn  | 2520 |
| ytncaymgnt  | tyathmgnc   | ngtngtynytn | ytnytnntty  | tngtynyntt  | yggngcnaay  | 2580 |
| ytnayytna   | tgtgyaayat  | hwsngtnggn  | ytngaycarg  | ayytnngcnyt | nccnaargay  | 2640 |
| wsntayytna  | thgaytaytt  | yytnnttyytn | aaymgntayy  | tngargtngg  | nccnccngtn  | 2700 |
| tayttygaya  | cnacnwsngg  | ntayaaytty  | wsnacngarg  | cnggnatgaa  | ygcnathtgy  | 2760 |
| wsnwsngcng  | gntgygarws  | nttywsnytn  | acncaraara  | thcartaygc  | nwsngartty  | 2820 |
| ccnaaycarw  | sntaygtngc  | nathgngcn   | wsnwsntggg  | tngaygaytt  | yathgaytgg  | 2880 |
| ytnacnccnw  | snwsnwsntg  | ytgymgnath  | tayacnmng   | gnccncayaa  | rgaygartty  | 2940 |
| tgyccnwsna  | cngayacnws  | nttyaaytgy  | ytnaaraayt  | gyatgaaymg  | nacnytnngn  | 3000 |
| ccngtnmgnc  | cnacnacnga  | rcarttycay  | aartayytnc  | cntgggttyt  | naaygayacn  | 3060 |
| ccnaayathm  | gntgyccnaa  | rggnggnytn  | gcngcntaym  | gnacnwsngt  | naayytnwsn  | 3120 |
| wsngayggnc  | arathathgc  | nwsncartty  | atggcntayc  | ayaarccnyt  | nmgnaaywsn  | 3180 |
| cargayttya  | cngargcnyt  | nmngncnwsn  | mgnytnytn   | cngcnaayat  | hacngcngar  | 3240 |
| ytnmgnaarg  | tnccnggnac  | ngayccnaay  | ttygargtnt  | tyccntayac  | nathwsnaay  | 3300 |
| gtnttytayc  | arcartayyt  | nacngtynytn | ccngarggna  | thttyacnyt  | ngcnytnngy  | 3360 |
| ttygtncna   | cnttygtngt  | ntgytayytn  | ytnytnngny  | tngayathmg  | nwsnggnath  | 3420 |
| ytnaayytny  | tnwsnathat  | hatgathytn  | gtngayacna  | thggnytnat  | ggcngtntgg  | 3480 |
| ggngathwsnt | ayaaygcngt  | nwsnytnath  | aayytngtna  | cngcngtngg  | natgwsngtn  | 3540 |

|   |      |
|---|------|
| garttygtnw sncayathac nmgnwsntty gcngtnwsna cnaarccnac nmgnytnGAR | 3600 |
| mgngcnaarg aygcnaCNat httyatgggn wsngcngtnt tygcnggngt ngcNatgacn | 3660 |
| aayttyccng gnathytNat hytnggntty gncargcnc arytnathca rathttytty  | 3720 |
| ttymgnytna ayytnytNat hacnytnytN ggnytnytnc ayggnytngt nttyytncn  | 3780 |
| gtngtnytNw sntayytngg nccngaygtN aaycargcny tngtnytnga rgaraarytn | 3840 |
| gcnaCngarg cngcNatggt nwsngarccn wsntgyccnc artayccntt yccngcngay | 3900 |
| gcnaayacnw sngaytaygt naaytayggN ttyaayccng arttyathcc ngarathaay | 3960 |
| gcngcnwsnw snwsnytncc naarwsngay caraartty                        | 3999 |

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<212> DNA

<213> Artificial sequence

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<223> primer

<400> 14

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<210> 15

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 15

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Glu | Gln | Phe | His | Lys | Tyr | Leu | Pro | Trp | Phe | Leu | Asn | Asp | Pro | Pro | Asn |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |

Ile Arg Cys

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<220>

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<400> 40

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Glu | Ala | Phe | Tyr | Gln | Arg | Ser | Phe | Ala | Glu | Lys | Ala | Tyr | Glu | Ser | Cys |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |

<210> 41

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<213> Artificial Sequence

<220>

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<400> 41

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gly | Gln | Thr | Ser | Leu | Val | Asp | Trp | Lys | Asp | His | Phe | Leu | Tyr | Cys |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |

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<213> Artificial Sequence

<220>

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<400> 42

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Ser

<210> 43

<211> 5092

<212> DNA

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<220>

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gcg gag gcc ggc ctg agg ggc tgg ctg ctg tgg gcc ctg ctc ctg cgc 107  
Ala Glu Ala Gly Leu Arg Gly Trp Leu Leu Trp Ala Leu Leu Leu Arg  
5 10 15

ttg gcc cag agt gag cct tac aca acc atc cac cag cct ggc tac tgc 155  
Leu Ala Gln Ser Glu Pro Tyr Thr Thr Ile His Gln Pro Gly Tyr Cys  
20 25 30

gcc ttc tat gac gaa tgt ggg aag aac cca gag ctg tct gga agc ctc 203  
Ala Phe Tyr Asp Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Ser Leu  
35 40 45

atg aca ctc tcc aac gtg tcc tgc ctg tcc aac acg ccg gcc cgc aag 251  
Met Thr Leu Ser Asn Val Ser Cys Leu Ser Asn Thr Pro Ala Arg Lys  
50 55 60 65

atc aca ggt gat cac ctg atc cta tta cag aag atc tgc ccc cgc ctc 299  
Ile Thr Gly Asp His Leu Ile Leu Leu Gln Lys Ile Cys Pro Arg Leu  
70 75 80

tac acc ggc ccc aac acc caa gcc tgc tgc tcc gcc aag cag ctg gta 347  
Tyr Thr Gly Pro Asn Thr Gln Ala Cys Ser Ala Lys Gln Leu Val  
85 90 95

tca ctg gaa gcg agt ctg tcg atc acc aag gcc ctc ctc acc cgc tgc 395  
Ser Leu Glu Ala Ser Leu Ser Ile Thr Lys Ala Leu Leu Thr Arg Cys  
100 105 110

|   |      |
|---|------|
| cca gcc tgc tct gac aat ttt gtg aac ctg cac tgc cac aac acg tgc | 443  |
| Pro Ala Cys Ser Asp Asn Phe Val Asn Leu His Cys His Asn Thr Cys |      |
| 115 120 125   |      |
| agc ccc aat cag agc ctc ttc atc aat gtg acc cgc gtg gcc cag cta | 491  |
| Ser Pro Asn Gln Ser Leu Phe Ile Asn Val Thr Arg Val Ala Gln Leu |      |
| 130 135 140 145   |      |
| ggg gct gga caa ctc cca gct gtg gtg gcc tat gag gcc ttc tac cag | 539  |
| Gly Ala Gly Gln Leu Pro Ala Val Val Ala Tyr Glu Ala Phe Tyr Gln |      |
| 150 155 160   |      |
| cat agc ttt gcc gag cag agc tat gac tcc tgc agc cgt gtg cgc gtc | 587  |
| His Ser Phe Ala Glu Gln Ser Tyr Asp Ser Cys Ser Arg Val Arg Val |      |
| 165 170 175   |      |
| cct gca gct gcc acg ctg gct gtg ggc acc atg tgt ggc gtg tat ggc | 635  |
| Pro Ala Ala Ala Thr Leu Ala Val Gly Thr Met Cys Gly Val Tyr Gly |      |
| 180 185 190   |      |
| tct gcc ctt tgc aat gcc cag cgc tgg ctc aac ttc cag gga gac aca | 683  |
| Ser Ala Leu Cys Asn Ala Gln Arg Trp Leu Asn Phe Gln Gly Asp Thr |      |
| 195 200 205   |      |
| ggc aat ggt ctg gcc cca ctg gac atc acc ttc cac ctc ttg gag cct | 731  |
| Gly Asn Gly Leu Ala Pro Leu Asp Ile Thr Phe His Leu Leu Glu Pro |      |
| 210 215 220 225   |      |
| ggc cag gcc gtg ggg agt ggg att cag cct ctg aat gag ggg gtt gca | 779  |
| Gly Gln Ala Val Gly Ser Gly Ile Gln Pro Leu Asn Glu Gly Val Ala |      |
| 230 235 240   |      |
| cgt tgc aat gag tcc caa ggt gac gac gtg gcg acc tgc tcc tgc caa | 827  |
| Arg Cys Asn Glu Ser Gln Gly Asp Asp Val Ala Thr Cys Ser Cys Gln |      |
| 245 250 255   |      |
| gac tgt gct gca tcc tgt cct gcc ata gcc cgc ccc cag gcc ctc gac | 875  |
| Asp Cys Ala Ala Ser Cys Pro Ala Ile Ala Arg Pro Gln Ala Leu Asp |      |
| 260 265 270   |      |
| tcc acc ttc tac ctg ggc cag atg ccg ggc agt ctg gtc ctc atc atc | 923  |
| Ser Thr Phe Tyr Leu Gly Gln Met Pro Gly Ser Leu Val Leu Ile Ile |      |
| 275 280 285   |      |
| atc ctc tgc tct gtc ttc gct gtg gtc acc atc ctg ctt gtg gga ttc | 971  |
| Ile Leu Cys Ser Val Phe Ala Val Val Thr Ile Leu Leu Val Gly Phe |      |
| 290 295 300 305   |      |
| cgt gtg gcc ccc gcc agg gac aaa agc aag atg gtg gac ccc aag aag | 1019 |
| Arg Val Ala Pro Ala Arg Asp Lys Ser Lys Met Val Asp Pro Lys Lys |      |
| 310 315 320   |      |
| ggc acc agc ctc tct gac aag ctc agc ttc tcc acc cac acc ctc ctt | 1067 |
| Gly Thr Ser Leu Ser Asp Lys Leu Ser Phe Ser Thr His Thr Leu Leu |      |
| 325 330 335   |      |
| ggc cag ttc ttc cag ggc tgg ggc acg tgg gtg gct tcg tgg cct ctg | 1115 |
| Gly Gln Phe Phe Gln Gly Trp Gly Thr Trp Val Ala Ser Trp Pro Leu |      |
| 340 345 350   |      |

|   |      |
|---|------|
| acc atc ttg gtg cta tct gtc atc ccg gtg gtg gcc ttg gca gcg ggc<br>Thr Ile Leu Val Leu Ser Val Ile Pro Val Val Ala Leu Ala Ala Gly<br>355 360 365     | 1163 |
| ctg gtc ttt aca gaa ctc act acg gac ccc gtg gag ctg tgg tcg gcc<br>Leu Val Phe Thr Glu Leu Thr Thr Asp Pro Val Glu Leu Trp Ser Ala<br>370 375 380 385 | 1211 |
| ccc aac agc caa gcc cgg agt gag aaa gct ttc cat gac cag cat ttc<br>Pro Asn Ser Gln Ala Arg Ser Glu Lys Ala Phe His Asp Gln His Phe<br>390 395 400     | 1259 |
| ggc ccc ttc ttc cga acc aac cag gtg atc ctg acg gct cct aac cgg<br>Gly Pro Phe Phe Arg Thr Asn Gln Val Ile Leu Thr Ala Pro Asn Arg<br>405 410 415     | 1307 |
| tcc agc tac agg tat gac tct ctg ctg ctg ggg ccc aag aac ttc agc<br>Ser Ser Tyr Arg Tyr Asp Ser Leu Leu Leu Gly Pro Lys Asn Phe Ser<br>420 425 430     | 1355 |
| gga atc ctg gac ctg gac ttg ctg ctg gag ctg cta gag ctg cag gag<br>Gly Ile Leu Asp Leu Asp Leu Leu Leu Glu Leu Leu Glu Leu Gln Glu<br>435 440 445     | 1403 |
| agg ctg cgg cac ctc cag gta tgg tcg ccc gaa gca cag cgc aac atc<br>Arg Leu Arg His Leu Gln Val Trp Ser Pro Glu Ala Gln Arg Asn Ile<br>450 455 460 465 | 1451 |
| tcc ctg cag gac atc tgc tac gcc ccc ctc aat ccg gac aat acc agt<br>Ser Leu Gln Asp Ile Cys Tyr Ala Pro Leu Asn Pro Asp Asn Thr Ser<br>470 475 480     | 1499 |
| ctc tac gac tgc tgc atc aac agc ctc ctg cag tat ttc cag aac aac<br>Leu Tyr Asp Cys Cys Ile Asn Ser Leu Leu Gln Tyr Phe Gln Asn Asn<br>485 490 495     | 1547 |
| cgc acg ctc ctg ctg ctc aca gcc aac cag aca ctg atg ggg cag acc<br>Arg Thr Leu Leu Leu Thr Ala Asn Gln Thr Leu Met Gly Gln Thr<br>500 505 510         | 1595 |
| tcc caa gtc gac tgg aag gac cat ttt ctg tac tgt gcc aat gcc ccg<br>Ser Gln Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala Pro<br>515 520 525     | 1643 |
| ctc acc ttc aag gat ggc aca gcc ctg gcc ctg agc tgc atg gct gac<br>Leu Thr Phe Lys Asp Gly Thr Ala Leu Ala Leu Ser Cys Met Ala Asp<br>530 535 540 545 | 1691 |
| tac ggg gcc cct gtc ttc ccc ttc ctt gcc att ggg ggg tac aaa gga<br>Tyr Gly Ala Pro Val Phe Pro Phe Leu Ala Ile Gly Gly Tyr Lys Gly<br>550 555 560     | 1739 |
| aag gac tat tct gag gca gag gcc ctg atc atg acg ttc tcc ctc aac<br>Lys Asp Tyr Ser Glu Ala Glu Ala Leu Ile Met Thr Phe Ser Leu Asn<br>565 570 575     | 1787 |
| aat tac cct gcc ggg gac ccc cgt ctg gcc cag gcc aag ctg tgg gag<br>Asn Tyr Pro Ala Gly Asp Pro Arg Leu Ala Gln Ala Lys Leu Trp Glu<br>580 585 590     | 1835 |
| gag gcc ttc tta gag gaa atg cga gcc ttc cag cgt cgg atg gct ggc   | 1883 |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |  |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|--|
| Glu | Ala | Phe | Leu | Glu | Glu | Met | Arg | Ala | Phe | Gln | Arg | Arg | Met | Ala | Gly |      |  |
| 595 |     |     |     |     |     | 600 |     |     |     |     | 605 |     |     |     |     |      |  |
| atg | ttc | cag | gtc | acg | ttc | atg | gct | gag | cgc | tct | ctg | gaa | gac | gag | atc | 1931 |  |
| Met | Phe | Gln | Val | Thr | Phe | Met | Ala | Glu | Arg | Ser | Leu | Glu | Asp | Glu | Ile |      |  |
| 610 |     |     |     |     | 615 |     |     |     |     | 620 |     |     |     |     | 625 |      |  |
| aat | cgc | acc | aca | gct | gaa | gac | ctg | ccc | atc | ttt | gcc | acc | agc | tac | att | 1979 |  |
| Asn | Arg | Thr | Thr | Ala | Glu | Asp | Leu | Pro | Ile | Phe | Ala | Thr | Ser | Tyr | Ile |      |  |
|     |     |     |     | 630 |     |     |     |     | 635 |     |     |     |     | 640 |     |      |  |
| gtc | ata | ttc | ctg | tac | atc | tct | ctg | gcc | ctg | ggc | agc | tat | tcc | agc | tgg | 2027 |  |
| Val | Ile | Phe | Leu | Tyr | Ile | Ser | Leu | Ala | Leu | Gly | Ser | Tyr | Ser | Ser | Trp |      |  |
|     |     |     | 645 |     |     |     |     | 650 |     |     |     |     | 655 |     |     |      |  |
| agc | cga | gtg | atg | gtg | gac | tcc | aag | gcc | acg | ctg | ggc | ctc | ggc | ggg | gtg | 2075 |  |
| Ser | Arg | Val | Met | Val | Asp | Ser | Lys | Ala | Thr | Leu | Gly | Leu | Gly | Gly | Val |      |  |
|     |     | 660 |     |     |     |     | 665 |     |     |     |     | 670 |     |     |     |      |  |
| gcc | gtg | gtc | ctg | gga | gca | gtc | atg | gct | gcc | atg | ggc | ttc | ttc | tcc | tac | 2123 |  |
| Ala | Val | Val | Leu | Gly | Ala | Val | Met | Ala | Ala | Met |     | Gly | Phe | Phe | Ser | Tyr  |  |
|     |     | 675 |     |     |     | 680 |     |     |     |     | 685 |     |     |     |     |      |  |
| ttg | ggc | atc | cgc | tcc | tcc | ctg | gtc | atc | ctg | caa | gtg | gtt | cct | ttc | ctg | 2171 |  |
| Leu | Gly | Ile | Arg | Ser | Ser | Leu | Val | Ile | Leu | Gln | Val | Val | Pro | Phe | Leu |      |  |
| 690 |     |     |     |     | 695 |     |     |     |     | 700 |     |     |     |     | 705 |      |  |
| gtg | ctg | tcc | gtg | ggg | gct | gat | aac | atc | ttc | atc | ttt | gtt | ctc | gag | tac | 2219 |  |
| Val | Leu | Ser | Val | Gly | Ala | Asp | Asn | Ile | Phe | Ile | Phe | Val | Leu | Glu | Tyr |      |  |
|     |     |     |     | 710 |     |     |     | 715 |     |     |     |     |     | 720 |     |      |  |
| cag | agg | ctg | ccc | cgg | agg | cct | ggg | gag | cca | cga | gag | gtc | cac | att | ggg | 2267 |  |
| Gln | Arg | Leu | Pro | Arg | Arg | Pro | Gly | Glu | Pro | Arg | Glu | Val | His | Ile | Gly |      |  |
|     |     |     | 725 |     |     |     |     | 730 |     |     |     |     | 735 |     |     |      |  |
| cga | gcc | cta | ggc | agg | gtg | gct | ccc | agc | atg | ctg | ttg | tgc | agc | ctc | tct | 2315 |  |
| Arg | Ala | Leu | Gly | Arg | Val | Ala | Pro | Ser | Met | Leu | Leu | Cys | Ser | Leu | Ser |      |  |
|     |     | 740 |     |     |     | 745 |     |     |     |     |     | 750 |     |     |     |      |  |
| gag | gcc | atc | tgc | ttc | ttc | cta | ggg | gcc | ctg | acc | ccc | atg | cca | gct | gtg | 2363 |  |
| Glu | Ala | Ile | Cys | Phe | Phe | Leu | Gly | Ala | Leu | Thr | Pro | Met | Pro | Ala | Val |      |  |
|     |     | 755 |     |     |     | 760 |     |     |     |     | 765 |     |     |     |     |      |  |
| cgg | acc | ttt | gcc | ctg | acc | tct | ggc | ctt | gca | gtg | atc | ctt | gac | ttc | ctc | 2411 |  |
| Arg | Thr | Phe | Ala | Leu | Thr | Ser | Gly | Leu | Ala | Val | Ile | Leu | Asp | Phe | Leu |      |  |
| 770 |     |     |     |     | 775 |     |     |     |     | 780 |     |     |     |     | 785 |      |  |
| ctg | cag | atg | tca | gcc | ttt | gtg | gcc | ctg | ctc | tcc | ctg | gac | agc | aag | agg | 2459 |  |
| Leu | Gln | Met | Ser | Ala | Phe | Val | Ala | Leu | Leu | Ser | Leu | Asp | Ser | Lys | Arg |      |  |
|     |     |     |     | 790 |     |     |     | 795 |     |     |     |     |     | 800 |     |      |  |
| cag | gag | gcc | tcc | cgg | ttg | gac | gtc | tgc | tgc | tgt | gtc | aag | ccc | cag | gag | 2507 |  |
| Gln | Glu | Ala | Ser | Arg | Leu | Asp | Val | Cys | Cys | Cys | Val | Lys | Pro | Gln | Glu |      |  |
|     |     |     | 805 |     |     |     |     | 810 |     |     |     |     | 815 |     |     |      |  |
| ctg | ccc | ccg | cct | ggc | cag | gga | gag | ggg | ctc | ctg | ctt | ggc | ttc | ttc | caa | 2555 |  |
| Leu | Pro | Pro | Pro | Gly | Gln | Gly | Glu | Gly | Leu | Leu | Leu | Gly | Phe | Phe | Gln |      |  |
|     |     | 820 |     |     |     |     | 825 |     |     |     |     | 830 |     |     |     |      |  |
| aag | gct | tat | gcc | ccc | ttc | ctg | ctg | cac | tgg | atc | act | cga | ggt | gtt | gtg | 2603 |  |
| Lys | Ala | Tyr | Ala | Pro | Phe | Leu | Leu | His | Trp | Ile | Thr | Arg | Gly | Val | Val |      |  |

| 835   | 840 | 845 |      |
|---|-----|-----|------|
| ctg ctg ctg ttt ctc gcc ctg ttc gga gtg agc ctc tac tcc atg tgc<br>Leu Leu Leu Phe Leu Ala Leu Phe Gly Val Ser Leu Tyr Ser Met Cys<br>850 855 860 865 |     |     | 2651 |
| cac atc agc gtg gga ctg gac cag gag ctg gcc ctg ccc aag gac tcg<br>His Ile Ser Val Gly Leu Asp Gln Glu Leu Ala Leu Pro Lys Asp Ser<br>870 875 880     |     |     | 2699 |
| tac ctg ctt gac tat ttc ctc ttt ctg aac cgc tac ttc gag gtg ggg<br>Tyr Leu Leu Asp Tyr Phe Leu Phe Leu Asn Arg Tyr Phe Glu Val Gly<br>885 890 895     |     |     | 2747 |
| gcc ccg gtg tac ttt gtt acc acc ttg ggc tac aac ttc tcc agc gag<br>Ala Pro Val Tyr Phe Val Thr Thr Leu Gly Tyr Asn Phe Ser Ser Glu<br>900 905 910     |     |     | 2795 |
| gct ggg atg aat gcc atc tgc tcc agt gca ggc tgc aac aac ttc tcc<br>Ala Gly Met Asn Ala Ile Cys Ser Ser Ala Gly Cys Asn Asn Phe Ser<br>915 920 925     |     |     | 2843 |
| ttc acc cag aag atc cag tat gcc aca gag ttc cct gag cag tct tac<br>Phe Thr Gln Lys Ile Gln Tyr Ala Thr Glu Phe Pro Glu Gln Ser Tyr<br>930 935 940 945 |     |     | 2891 |
| ctg gcc atc cct gcc tcc tcc tgg gtg gat gac ttc att gac tgg ctg<br>Leu Ala Ile Pro Ala Ser Ser Trp Val Asp Asp Phe Ile Asp Trp Leu<br>950 955 960     |     |     | 2939 |
| acc ccg tcc tcc tgc tgc cgc ctt tat ata tct ggc ccc aat aag gac<br>Thr Pro Ser Ser Cys Cys Arg Leu Tyr Ile Ser Gly Pro Asn Lys Asp<br>965 970 975     |     |     | 2987 |
| aag ttc tgc ccc tcg acc gtc aac tct ctg aac tgc cta aag aac tgc<br>Lys Phe Cys Pro Ser Thr Val Asn Ser Leu Asn Cys Leu Lys Asn Cys<br>980 985 990     |     |     | 3035 |
| atg agc atc acg atg ggc tct gtg agg ccc tcg gtg gag cag ttc cat<br>Met Ser Ile Thr Met Gly Ser Val Arg Pro Ser Val Glu Gln Phe His<br>995 1000 1005   |     |     | 3083 |
| aag tat ctt ccc tgg ttc ctg aac gac cgg ccc aac atc aaa tgt<br>Lys Tyr Leu Pro Trp Phe Leu Asn Asp Arg Pro Asn Ile Lys Cys<br>1010 1015 1020          |     |     | 3128 |
| ccc aaa ggc ggc ctg gca gca tac agc acc tct gtg aac ttg act<br>Pro Lys Gly Gly Leu Ala Ala Tyr Ser Thr Ser Val Asn Leu Thr<br>1025 1030 1035          |     |     | 3173 |
| tca gat ggc cag gtt tta gac aca gtt gcc att ctg tca ccc agg<br>Ser Asp Gly Gln Val Leu Asp Thr Val Ala Ile Leu Ser Pro Arg<br>1040 1045 1050          |     |     | 3218 |
| ctg gag tac agt ggc aca atc tcg gct cac tgc aac ctc tac ctc<br>Leu Glu Tyr Ser Gly Thr Ile Ser Ala His Cys Asn Leu Tyr Leu<br>1055 1060 1065          |     |     | 3263 |
| ctg gat tca gcc tcc agg ttc atg gcc tat cac aag ccc ctg aaa<br>Leu Asp Ser Ala Ser Arg Phe Met Ala Tyr His Lys Pro Leu Lys<br>1070 1075 1080          |     |     | 3308 |

|                    |            |            |            |            |                    |            |            |            |            |                    |            |            |            |            |      |
|--------------------|------------|------------|------------|------------|--------------------|------------|------------|------------|------------|--------------------|------------|------------|------------|------------|------|
| aac<br>Asn<br>1085 | tca<br>Ser | cag<br>Gln | gat<br>Asp | tac<br>Tyr | aca<br>Thr<br>1090 | gaa<br>Glu | gct<br>Ala | ctg<br>Leu | cgg<br>Arg | gca<br>Ala<br>1095 | gct<br>Ala | cga<br>Arg | gag<br>Glu | ctg<br>Leu | 3353 |
| gca<br>Ala<br>1100 | gcc<br>Ala | aac<br>Asn | atc<br>Ile | act<br>Thr | gct<br>Ala<br>1105 | gac<br>Asp | ctg<br>Leu | cgg<br>Arg | aaa<br>Lys | gtg<br>Val<br>1110 | cct<br>Pro | gga<br>Gly | aca<br>Thr | gac<br>Asp | 3398 |
| ccg<br>Pro<br>1115 | gct<br>Ala | ttt<br>Phe | gag<br>Glu | gtc<br>Val | ttc<br>Phe<br>1120 | ccc<br>Pro | tac<br>Tyr | acg<br>Thr | atc<br>Ile | acc<br>Thr<br>1125 | aat<br>Asn | gtg<br>Val | ttt<br>Phe | tat<br>Tyr | 3443 |
| gag<br>Glu<br>1130 | cag<br>Gln | tac<br>Tyr | ctg<br>Leu | acc<br>Thr | atc<br>Ile<br>1135 | ctc<br>Leu | cct<br>Pro | gag<br>Glu | ggg<br>Gly | ctc<br>Leu<br>1140 | ttc<br>Phe | atg<br>Met | ctc<br>Leu | agc<br>Ser | 3488 |
| ctc<br>Leu<br>1145 | tgc<br>Cys | ctt<br>Leu | gtg<br>Val | ccc<br>Pro | acc<br>Thr<br>1150 | ttc<br>Phe | gct<br>Ala | gtc<br>Val | tcc<br>Ser | tgc<br>Cys<br>1155 | ctc<br>Leu | ctg<br>Leu | ctg<br>Leu | ggc<br>Gly | 3533 |
| ctg<br>Leu<br>1160 | gac<br>Asp | ctg<br>Leu | cgc<br>Arg | tcc<br>Ser | ggc<br>Gly<br>1165 | ctc<br>Leu | ctc<br>Leu | aac<br>Asn | ctg<br>Leu | ctc<br>Leu<br>1170 | tcc<br>Ser | att<br>Ile | gtc<br>Val | atg<br>Met | 3578 |
| atc<br>Ile<br>1175 | ctc<br>Leu | gtg<br>Val | gac<br>Asp | act<br>Thr | gtc<br>Val<br>1180 | ggc<br>Gly | ttc<br>Phe | atg<br>Met | gcc<br>Ala | ctg<br>Leu<br>1185 | tgg<br>Trp | ggc<br>Gly | atc<br>Ile | agt<br>Ser | 3623 |
| tac<br>Tyr<br>1190 | aat<br>Asn | gct<br>Ala | gtg<br>Val | tcc<br>Ser | ctc<br>Leu<br>1195 | atc<br>Ile | aac<br>Asn | ctg<br>Leu | gtc<br>Val | tgc<br>Ser<br>1200 | gcg<br>Ala | gtg<br>Val | ggc<br>Gly | atg<br>Met | 3668 |
| tct<br>Ser<br>1205 | gtg<br>Val | gag<br>Glu | ttt<br>Phe | gtg<br>Val | tcc<br>Ser<br>1210 | cac<br>His | att<br>Ile | acc<br>Thr | cgc<br>Arg | tcc<br>Ser<br>1215 | ttt<br>Phe | gcc<br>Ala | atc<br>Ile | agc<br>Ser | 3713 |
| acc<br>Thr<br>1220 | aag<br>Lys | ccc<br>Pro | acc<br>Thr | tgg<br>Trp | ctg<br>Leu<br>1225 | gag<br>Glu | agg<br>Arg | gcc<br>Ala | aaa<br>Lys | gag<br>Glu<br>1230 | gcc<br>Ala | acc<br>Thr | atc<br>Ile | tct<br>Ser | 3758 |
| atg<br>Met<br>1235 | gga<br>Gly | agt<br>Ser | gcg<br>Ala | gtg<br>Val | ttt<br>Phe<br>1240 | gca<br>Ala | ggt<br>Gly | gtg<br>Val | gcc<br>Ala | atg<br>Met<br>1245 | acc<br>Thr | aac<br>Asn | ctg<br>Leu | cct<br>Pro | 3803 |
| ggc<br>Gly<br>1250 | atc<br>Ile | ctt<br>Leu | gtc<br>Val | ctg<br>Leu | ggc<br>Gly<br>1255 | ctc<br>Leu | gcc<br>Ala | aag<br>Lys | gcc<br>Ala | cag<br>Gln<br>1260 | ctc<br>Leu | att<br>Ile | cag<br>Gln | atc<br>Ile | 3848 |
| ttc<br>Phe<br>1265 | ttc<br>Phe | ttc<br>Phe | cgc<br>Arg | ctc<br>Leu | aac<br>Asn<br>1270 | ctc<br>Leu | ctg<br>Leu | atc<br>Ile | act<br>Thr | ctg<br>Leu<br>1275 | ctg<br>Leu | ggc<br>Gly | ctg<br>Leu | ctg<br>Leu | 3893 |
| cat<br>His<br>1280 | ggc<br>Gly | ttg<br>Leu | gtc<br>Val | ttc<br>Phe | ctg<br>Leu<br>1285 | ccc<br>Pro | gtc<br>Val | atc<br>Ile | ctc<br>Leu | agc<br>Ser<br>1290 | tac<br>Tyr | gtg<br>Val | ggg<br>Gly | cct<br>Pro | 3938 |
| gac<br>Asp<br>1295 | gtt<br>Val | aac<br>Asn | ccg<br>Pro | gct<br>Ala | ctg<br>Leu<br>1300 | gca<br>Ala | ctg<br>Leu | gag<br>Glu | cag<br>Gln | aag<br>Lys<br>1305 | cgg<br>Arg | gct<br>Ala | gag<br>Glu | gag<br>Glu | 3983 |

|             |             |            |            |            |            |            |            |            |     |      |     |     |     |      |      |
|-------------|-------------|------------|------------|------------|------------|------------|------------|------------|-----|------|-----|-----|-----|------|------|
| gcg         | gtg         | gca        | gca        | gtc        | atg        | gtg        | gcc        | tct        | tgc | cca  | aat | cac | ccc | tcc  | 4028 |
| Ala         | Val         | Ala        | Ala        | Val        | Met        | Val        | Ala        | Ser        | Cys | Pro  | Asn | His | Pro | Ser  |      |
| 1310        |             |            |            |            | 1315       |            |            |            |     | 1320 |     |     |     |      |      |
|             |             |            |            |            |            |            |            |            |     |      |     |     |     |      |      |
| cga         | gtc         | tcc        | aca        | gct        | gac        | aac        | atc        | tat        | gtc | aac  | cac | agc | ttt | gaa  | 4073 |
| Arg         | Val         | Ser        | Thr        | Ala        | Asp        | Asn        | Ile        | Tyr        | Val | Asn  | His | Ser | Phe | Glu  |      |
| 1325        |             |            |            |            | 1330       |            |            |            |     | 1335 |     |     |     |      |      |
|             |             |            |            |            |            |            |            |            |     |      |     |     |     |      |      |
| ggg         | tct         | atc        | aaa        | ggg        | gct        | ggg        | gcc        | atc        | agc | aac  | ttc | ttg | ccc | aac  | 4118 |
| Gly         | Ser         | Ile        | Lys        | Gly        | Ala        | Gly        | Ala        | Ile        | Ser | Asn  | Phe | Leu | Pro | Asn  |      |
| 1340        |             |            |            |            | 1345       |            |            |            |     | 1350 |     |     |     |      |      |
|             |             |            |            |            |            |            |            |            |     |      |     |     |     |      |      |
| aat         | ggg         | cgg        | cag        | ttc        | tga        | tacagccaga | ggccctgtct | aggctctatg |     |      |     |     |     |      | 4166 |
| Asn         | Gly         | Arg        | Gln        | Phe        |            |            |            |            |     |      |     |     |     |      |      |
| 1355        |             |            |            |            |            |            |            |            |     |      |     |     |     |      |      |
|             |             |            |            |            |            |            |            |            |     |      |     |     |     |      |      |
| gccctgaacc  | aaaggggttat | ggggatcttc | cttgtgactg | ccccttgaca | cacgccctcc |            |            |            |     |      |     |     |     |      | 4226 |
| tcaaatecta  | ggggaggcca  | ttcccatgag | actgcctgtc | actggaggat | ggcctgctct |            |            |            |     |      |     |     |     |      | 4286 |
| tgaggatatcc | aggcagcacc  | actgatggct | cctctgctcc | catagtgggt | ccccagtttc |            |            |            |     |      |     |     |     |      | 4346 |
| caagtcacct  | aggccttggg  | cagtgcctcc | tcctgggcct | gggtctggaa | gttggcagga |            |            |            |     |      |     |     |     |      | 4406 |
| acagacacac  | tccatgtttg  | tcccacactc | actcactttc | ctaggagccc | acttctcatc |            |            |            |     |      |     |     |     |      | 4466 |
| caactttttcc | cttctcagtt  | cctctctcga | aagtcttaat | tctgtgtcag | taagtcttta |            |            |            |     |      |     |     |     |      | 4526 |
| acacgtagca  | gtgtccctga  | gaacacagac | aatgaccact | accctgggtg | tgatatcaca |            |            |            |     |      |     |     |     |      | 4586 |
| ggaggccaga  | gagaggcaaa  | ggctcaggcc | aagagccaac | gctgtgggag | gccggtcggc |            |            |            |     |      |     |     |     |      | 4646 |
| agccactccc  | tccagggcgc  | acctgcaggt | ctgccatcca | cggccttttc | tggcaagaga |            |            |            |     |      |     |     |     |      | 4706 |
| agggcccagg  | aaggatgctc  | tcataaggcc | caggaaggat | gctctcataa | gcaccttggt |            |            |            |     |      |     |     |     |      | 4766 |
| catggattag  | cccctcctgg  | aaaatgggtg | tgggtttggg | ctccagctcc | aatacttatt |            |            |            |     |      |     |     |     |      | 4826 |
| aaggctgttg  | ctgccagtca  | aggccacca  | ggagtctgaa | ggctgggagc | tcttggggct |            |            |            |     |      |     |     |     |      | 4886 |
| gggctgggtcc | tcccatcttc  | acctcggggc | tggatcccag | gcctcaaacc | agcccaaccc |            |            |            |     |      |     |     |     |      | 4946 |
| gagcttttgg  | acagctctcc  | agaagcatga | actgcagtgg | agatgaagat | cctggctctg |            |            |            |     |      |     |     |     |      | 5006 |
| tgctgtgcac  | ataggtgttt  | aataaacatt | tgttggcaga | aaaaaaaaaa | aaaaaaaaaa |            |            |            |     |      |     |     |     |      | 5066 |
| aaaaaaaaaa  | aaaaaaaaaa  | aaaaaa     |            |            |            |            |            |            |     |      |     |     |     | 5092 |      |

<210> 44

<211> 1359

<212> PRT

<213> Homo sapiens

<400> 44

Met Ala Glu Ala Gly Leu Arg Gly Trp Leu Leu Trp Ala Leu Leu Leu  
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 Arg Leu Ala Gln Ser Glu Pro Tyr Thr Thr Ile His Gln Pro Gly Tyr  
 20 25 30  
 Cys Ala Phe Tyr Asp Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Ser  
 35 40 45  
 Leu Met Thr Leu Ser Asn Val Ser Cys Leu Ser Asn Thr Pro Ala Arg  
 50 55 60  
 Lys Ile Thr Gly Asp His Leu Ile Leu Leu Gln Lys Ile Cys Pro Arg  
 65 70 75 80  
 Leu Tyr Thr Gly Pro Asn Thr Gln Ala Cys Cys Ser Ala Lys Gln Leu  
 85 90 95  
 Val Ser Leu Glu Ala Ser Leu Ser Ile Thr Lys Ala Leu Leu Thr Arg  
 100 105 110  
 Cys Pro Ala Cys Ser Asp Asn Phe Val Asn Leu His Cys His Asn Thr  
 115 120 125  
 Cys Ser Pro Asn Gln Ser Leu Phe Ile Asn Val Thr Arg Val Ala Gln  
 130 135 140  
 Leu Gly Ala Gly Gln Leu Pro Ala Val Val Ala Tyr Glu Ala Phe Tyr  
 145 150 155 160  
 Gln His Ser Phe Ala Glu Gln Ser Tyr Asp Ser Cys Ser Arg Val Arg  
 165 170 175  
 Val Pro Ala Ala Ala Thr Leu Ala Val Gly Thr Met Cys Gly Val Tyr  
 180 185 190  
 Gly Ser Ala Leu Cys Asn Ala Gln Arg Trp Leu Asn Phe Gln Gly Asp  
 195 200 205  
 Thr Gly Asn Gly Leu Ala Pro Leu Asp Ile Thr Phe His Leu Leu Glu  
 210 215 220  
 Pro Gly Gln Ala Val Gly Ser Gly Ile Gln Pro Leu Asn Glu Gly Val  
 225 230 235 240  
 Ala Arg Cys Asn Glu Ser Gln Gly Asp Asp Val Ala Thr Cys Ser Cys



|  |     |     |
|--|-----|-----|
| 245  | 250 | 255 |
| Gln Asp Cys Ala Ala Ser Cys Pro Ala Ile Ala Arg Pro Gln Ala Leu<br>260 265 270     |     |     |
| Asp Ser Thr Phe Tyr Leu Gly Gln Met Pro Gly Ser Leu Val Leu Ile<br>275 280 285     |     |     |
| Ile Ile Leu Cys Ser Val Phe Ala Val Val Thr Ile Leu Leu Val Gly<br>290 295 300     |     |     |
| Phe Arg Val Ala Pro Ala Arg Asp Lys Ser Lys Met Val Asp Pro Lys<br>305 310 315 320 |     |     |
| Lys Gly Thr Ser Leu Ser Asp Lys Leu Ser Phe Ser Thr His Thr Leu<br>325 330 335     |     |     |
| Leu Gly Gln Phe Phe Gln Gly Trp Gly Thr Trp Val Ala Ser Trp Pro<br>340 345 350     |     |     |
| Leu Thr Ile Leu Val Leu Ser Val Ile Pro Val Val Ala Leu Ala Ala<br>355 360 365     |     |     |
| Gly Leu Val Phe Thr Glu Leu Thr Thr Asp Pro Val Glu Leu Trp Ser<br>370 375 380     |     |     |
| Ala Pro Asn Ser Gln Ala Arg Ser Glu Lys Ala Phe His Asp Gln His<br>385 390 395 400 |     |     |
| Phe Gly Pro Phe Phe Arg Thr Asn Gln Val Ile Leu Thr Ala Pro Asn<br>405 410 415     |     |     |
| Arg Ser Ser Tyr Arg Tyr Asp Ser Leu Leu Leu Gly Pro Lys Asn Phe<br>420 425 430     |     |     |
| Ser Gly Ile Leu Asp Leu Asp Leu Leu Leu Glu Leu Leu Glu Leu Gln<br>435 440 445     |     |     |
| Glu Arg Leu Arg His Leu Gln Val Trp Ser Pro Glu Ala Gln Arg Asn<br>450 455 460     |     |     |
| Ile Ser Leu Gln Asp Ile Cys Tyr Ala Pro Leu Asn Pro Asp Asn Thr<br>465 470 475 480 |     |     |
| Ser Leu Tyr Asp Cys Cys Ile Asn Ser Leu Leu Gln Tyr Phe Gln Asn<br>485 490 495     |     |     |

Asn Arg Thr Leu Leu Leu Leu Thr Ala Asn Gln Thr Leu Met Gly Gln  
 500 505 510

Thr Ser Gln Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala  
 515 520 525

Pro Leu Thr Phe Lys Asp Gly Thr Ala Leu Ala Leu Ser Cys Met Ala  
 530 535 540

Asp Tyr Gly Ala Pro Val Phe Pro Phe Leu Ala Ile Gly Gly Tyr Lys  
 545 550 555 560

Gly Lys Asp Tyr Ser Glu Ala Glu Ala Leu Ile Met Thr Phe Ser Leu  
 565 570 575

Asn Asn Tyr Pro Ala Gly Asp Pro Arg Leu Ala Gln Ala Lys Leu Trp  
 580 585 590

Glu Glu Ala Phe Leu Glu Glu Met Arg Ala Phe Gln Arg Arg Met Ala  
 595 600 605

Gly Met Phe Gln Val Thr Phe Met Ala Glu Arg Ser Leu Glu Asp Glu  
 610 615 620

Ile Asn Arg Thr Thr Ala Glu Asp Leu Pro Ile Phe Ala Thr Ser Tyr  
 625 630 635 640

Ile Val Ile Phe Leu Tyr Ile Ser Leu Ala Leu Gly Ser Tyr Ser Ser  
 645 650 655

Trp Ser Arg Val Met Val Asp Ser Lys Ala Thr Leu Gly Leu Gly Gly  
 660 665 670

Val Ala Val Val Leu Gly Ala Val Met Ala Ala Met Gly Phe Phe Ser  
 675 680 685

Tyr Leu Gly Ile Arg Ser Ser Leu Val Ile Leu Gln Val Val Pro Phe  
 690 695 700

Leu Val Leu Ser Val Gly Ala Asp Asn Ile Phe Ile Phe Val Leu Glu  
 705 710 715 720

Tyr Gln Arg Leu Pro Arg Arg Pro Gly Glu Pro Arg Glu Val His Ile  
 725 730 735

Gly Arg Ala Leu Gly Arg Val Ala Pro Ser Met Leu Leu Cys Ser Leu  
740 745 750

Ser Glu Ala Ile Cys Phe Phe Leu Gly Ala Leu Thr Pro Met Pro Ala  
755 760 765

Val Arg Thr Phe Ala Leu Thr Ser Gly Leu Ala Val Ile Leu Asp Phe  
770 775 780

Leu Leu Gln Met Ser Ala Phe Val Ala Leu Leu Ser Leu Asp Ser Lys  
785 790 795 800

Arg Gln Glu Ala Ser Arg Leu Asp Val Cys Cys Cys Val Lys Pro Gln  
805 810 815

Glu Leu Pro Pro Pro Gly Gln Gly Glu Gly Leu Leu Leu Gly Phe Phe  
820 825 830

Gln Lys Ala Tyr Ala Pro Phe Leu Leu His Trp Ile Thr Arg Gly Val  
835 840 845

Val Leu Leu Leu Phe Leu Ala Leu Phe Gly Val Ser Leu Tyr Ser Met  
850 855 860

Cys His Ile Ser Val Gly Leu Asp Gln Glu Leu Ala Leu Pro Lys Asp  
865 870 875 880

Ser Tyr Leu Leu Asp Tyr Phe Leu Phe Leu Asn Arg Tyr Phe Glu Val  
885 890 895

Gly Ala Pro Val Tyr Phe Val Thr Thr Leu Gly Tyr Asn Phe Ser Ser  
900 905 910

Glu Ala Gly Met Asn Ala Ile Cys Ser Ser Ala Gly Cys Asn Asn Phe  
915 920 925

Ser Phe Thr Gln Lys Ile Gln Tyr Ala Thr Glu Phe Pro Glu Gln Ser  
930 935 940

Tyr Leu Ala Ile Pro Ala Ser Ser Trp Val Asp Asp Phe Ile Asp Trp  
945 950 955 960

Leu Thr Pro Ser Ser Cys Cys Arg Leu Tyr Ile Ser Gly Pro Asn Lys  
965 970 975

Asp Lys Phe Cys Pro Ser Thr Val Asn Ser Leu Asn Cys Leu Lys Asn  
980 985 990

Cys Met Ser Ile Thr Met Gly Ser Val Arg Pro Ser Val Glu Gln Phe  
995 1000 1005

His Lys Tyr Leu Pro Trp Phe Leu Asn Asp Arg Pro Asn Ile Lys  
1010 1015 1020

Cys Pro Lys Gly Gly Leu Ala Ala Tyr Ser Thr Ser Val Asn Leu  
1025 1030 1035

Thr Ser Asp Gly Gln Val Leu Asp Thr Val Ala Ile Leu Ser Pro  
1040 1045 1050

Arg Leu Glu Tyr Ser Gly Thr Ile Ser Ala His Cys Asn Leu Tyr  
1055 1060 1065

Leu Leu Asp Ser Ala Ser Arg Phe Met Ala Tyr His Lys Pro Leu  
1070 1075 1080

Lys Asn Ser Gln Asp Tyr Thr Glu Ala Leu Arg Ala Ala Arg Glu  
1085 1090 1095

Leu Ala Ala Asn Ile Thr Ala Asp Leu Arg Lys Val Pro Gly Thr  
1100 1105 1110

Asp Pro Ala Phe Glu Val Phe Pro Tyr Thr Ile Thr Asn Val Phe  
1115 1120 1125

Tyr Glu Gln Tyr Leu Thr Ile Leu Pro Glu Gly Leu Phe Met Leu  
1130 1135 1140

Ser Leu Cys Leu Val Pro Thr Phe Ala Val Ser Cys Leu Leu Leu  
1145 1150 1155

Gly Leu Asp Leu Arg Ser Gly Leu Leu Asn Leu Leu Ser Ile Val  
1160 1165 1170

Met Ile Leu Val Asp Thr Val Gly Phe Met Ala Leu Trp Gly Ile  
1175 1180 1185

Ser Tyr Asn Ala Val Ser Leu Ile Asn Leu Val Ser Ala Val Gly  
1190 1195 1200

Met Ser Val Glu Phe Val Ser His Ile Thr Arg Ser Phe Ala Ile

|                         |                     |                 |  |      |
|-------------------------|---------------------|-----------------|--|------|
| 1205                    |                     | 1210            |  | 1215 |
| Ser Thr Lys Pro Thr Trp | Leu Glu Arg Ala Lys | Glu Ala Thr Ile |  |      |
| 1220                    | 1225                | 1230            |  |      |
| Ser Met Gly Ser Ala Val | Phe Ala Gly Val Ala | Met Thr Asn Leu |  |      |
| 1235                    | 1240                | 1245            |  |      |
| Pro Gly Ile Leu Val Leu | Gly Leu Ala Lys Ala | Gln Leu Ile Gln |  |      |
| 1250                    | 1255                | 1260            |  |      |
| Ile Phe Phe Phe Arg Leu | Asn Leu Leu Ile Thr | Leu Leu Gly Leu |  |      |
| 1265                    | 1270                | 1275            |  |      |
| Leu His Gly Leu Val Phe | Leu Pro Val Ile Leu | Ser Tyr Val Gly |  |      |
| 1280                    | 1285                | 1290            |  |      |
| Pro Asp Val Asn Pro Ala | Leu Ala Leu Glu Gln | Lys Arg Ala Glu |  |      |
| 1295                    | 1300                | 1305            |  |      |
| Glu Ala Val Ala Ala Val | Met Val Ala Ser Cys | Pro Asn His Pro |  |      |
| 1310                    | 1315                | 1320            |  |      |
| Ser Arg Val Ser Thr Ala | Asp Asn Ile Tyr Val | Asn His Ser Phe |  |      |
| 1325                    | 1330                | 1335            |  |      |
| Glu Gly Ser Ile Lys Gly | Ala Gly Ala Ile Ser | Asn Phe Leu Pro |  |      |
| 1340                    | 1345                | 1350            |  |      |
| Asn Asn Gly Arg Gln Phe |                     |                 |  |      |
| 1355                    |                     |                 |  |      |

<210> 45

<211> 4471

<212> DNA

<213> Mus musculus

|   |     |
|---|-----|
| <400> 45  |     |
| ggatcacttc ctggctctgg gatggcagct gcctggcagg gatggctgct ctgggccctg | 60  |
| ctcctgaatt cggcccaggg tgagctctac acaccactc acaaagctgg cttctgcacc  | 120 |
| ttttatgaag agtgtgggaa gaaccagag ctttctggag gcctcacatc actatccaat  | 180 |
| atctcctgct tgtctaatac cccagccccg ccatgtcaca ggtgaccacc tggctcttct | 240 |

|             |             |            |            |            |            |      |
|-------------|-------------|------------|------------|------------|------------|------|
| ccagcgcgctc | tgtccccgcc  | tatacaatgg | ccccaatgac | acctatgcct | gttgctctac | 300  |
| caagcagctg  | gtgtcattag  | acagtagcct | gtctatcacc | aaggccctcc | ttacacgctg | 360  |
| cccggcatgc  | tctgaaaatt  | ttgtgagcat | acactgtcat | aatacctgca | gccctgacca | 420  |
| gagcctcttc  | atcaatgtta  | ctcgcgtggg | tcagcgggac | cctggacagc | ttcctgctgt | 480  |
| gggtggcctat | gaggcctttt  | atcaacgcag | ttttgcagag | aaggcctatg | agtcctgtag | 540  |
| ccgggtgcgc  | atccctgcag  | ctgcctcgct | ggctgtgggc | agcatgtgtg | gagtgtatgg | 600  |
| ctctgccctc  | tgcaatgctc  | agcgcctggc | tcaacttcca | aggagacaca | gggaatggcc | 660  |
| tggctccgct  | ggacatcacc  | ttccacctct | tggagcctgg | ccaggccctg | gcagatggga | 720  |
| tgaagccact  | ggatgggaag  | atcaaaccct | gcaatgagtc | ccagggtgaa | gactcggcag | 780  |
| cctgttcctg  | ccaggactgt  | gcagcatcct | gccctgtcat | ccctccgccc | ccggccctgc | 840  |
| gcccttcttt  | ctacatgggt  | cgaatgccag | gctggctggc | tctcatcatc | atcttcactg | 900  |
| ctgtctttgt  | attgctctct  | gttgctcctt | tgtatctccg | agtggcttcc | aacaggaaca | 960  |
| agaacaagac  | agcaggctcc  | caggaagccc | ccaacctccc | tcgtaagcgc | agattctcac | 1020 |
| ctcacactgt  | ccttggccgg  | ttcttcgaga | gctggggaac | aatggtggcc | tcatggccac | 1080 |
| tcaactgtctt | ggcactgtcc  | ttcatagtgt | tgatagcctt | gtcagtaggc | ctgaccttta | 1140 |
| tagaactcac  | cacagaccct  | gtggaactgt | ggtcggcccc | taaaagccaa | gcccggaaag | 1200 |
| aaaaggcctt  | ccatgacgag  | cattttggcc | ccttcttccg | aaccaaccag | atttttgtga | 1260 |
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